MAY
1954

BUS TRANSPORTATION

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A New Idea For Equipment Financing . . . p. 28

Eight New Shop Ideas To Cut Costs . . . p. 30

High Court Decisions In Bus Cases . . . p. 34

Reviewing Industry Trends . . . p. 52

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Transit CCM Buses, Inc.

THIS NAME MEANS Better Buses

Model 332

Transit Buses, Inc.
Subsidiary of
CHECKER CAB MANUFACTURING CORP.
Factory • KALAMAZOO, MICH.
Sales Offices • SCHAEFFER Rd. at ELMIRA, Detroit 27, Mich.

This 32 passenger Transit Bus is of modern design and rugged construction . . . beautifully styled and comfortably appointed. It's a better bus from every standpoint.

NEW PROVING GROUND ON WHEELS

records 3 vital braking factors— *continuously • simultaneously • automatically!*

Now we can duplicate any given braking problem—*under actual road test conditions.*

This new testing facility, first in the industry to be completely instrument-equipped, automatically measures and continuously records:

1. Temperatures at all four brake drums.
2. Operating line pressures.
3. Speed and time factors.

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Such information helps us produce brake lining that's safe and dependable under every operating condition . . . with maximum mileage, minimum maintenance *built-in.* Install American Brakeblok next time you reline; it's available from N. A. P. A. jobbers everywhere.

American Brakeblok

AMERICA'S *SAFETY* BRAKE LINING

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Articles in Bus Transportation are listed in an index made available on request at the close of each year.

BUS TRANSPORTATION

MAY • 1954

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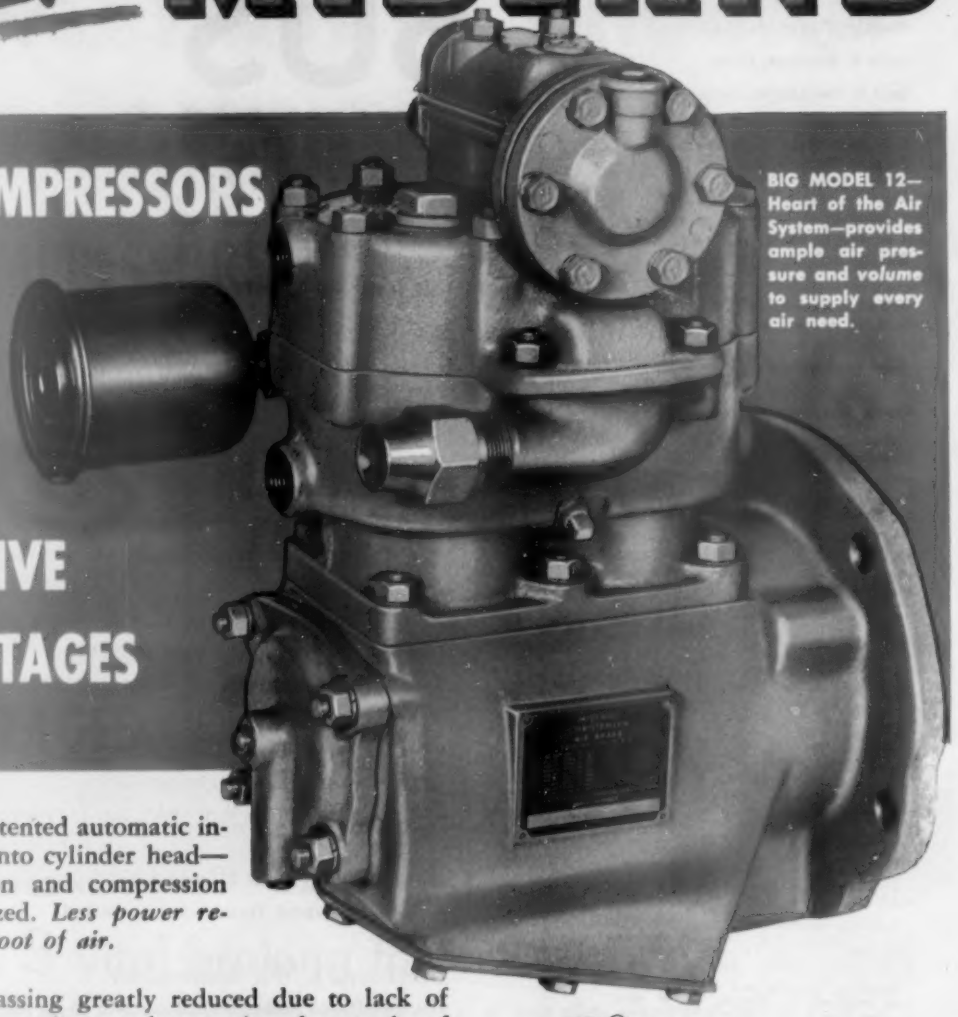
Next Month . . .

How to get more for your maintenance dollar is the theme of the 28th Annual Maintenance Issue. Packed with features on new maintenance and shop practices, it also includes engine tune-up tables with data on current vehicle models, as well as front end alignment tables for all motor and trolley buses. The June issue will also carry the Annual Buyer's Guide, an authentic source of "where-to-buy" type of information.

ONLY MIDLAND

AIR COMPRESSORS OFFER ALL THESE EXCLUSIVE ADVANTAGES



BIG MODEL 12—Heart of the Air System—provides ample air pressure and volume to supply every air need.

More Efficient Patented automatic inlet valves—built into cylinder head—permit full suction and compression stroke to be utilized. *Less power required per cubic foot of air.*

Cleaner Air Oil-passing greatly reduced due to lack of high vacuum on suction stroke—again, the result of patented automatic inlet valves. Carbon formation practically eliminated.

Cooler Operation Cylinder head and block completely water-cooled. Valves are held open when compressor is idling to permit air at atmospheric pressure to pass in and out to cool compressor.

Simpler Installation Governor connected directly to cylinder head, eliminating use of remote control, fittings, etc.

Those who know Power Brakes CHOOSE MIDLAND

See your nearest Midland Distributor or write

THE MIDLAND STEEL PRODUCTS CO.
3641 E. MILWAUKEE AVE. • DETROIT 11, MICH.
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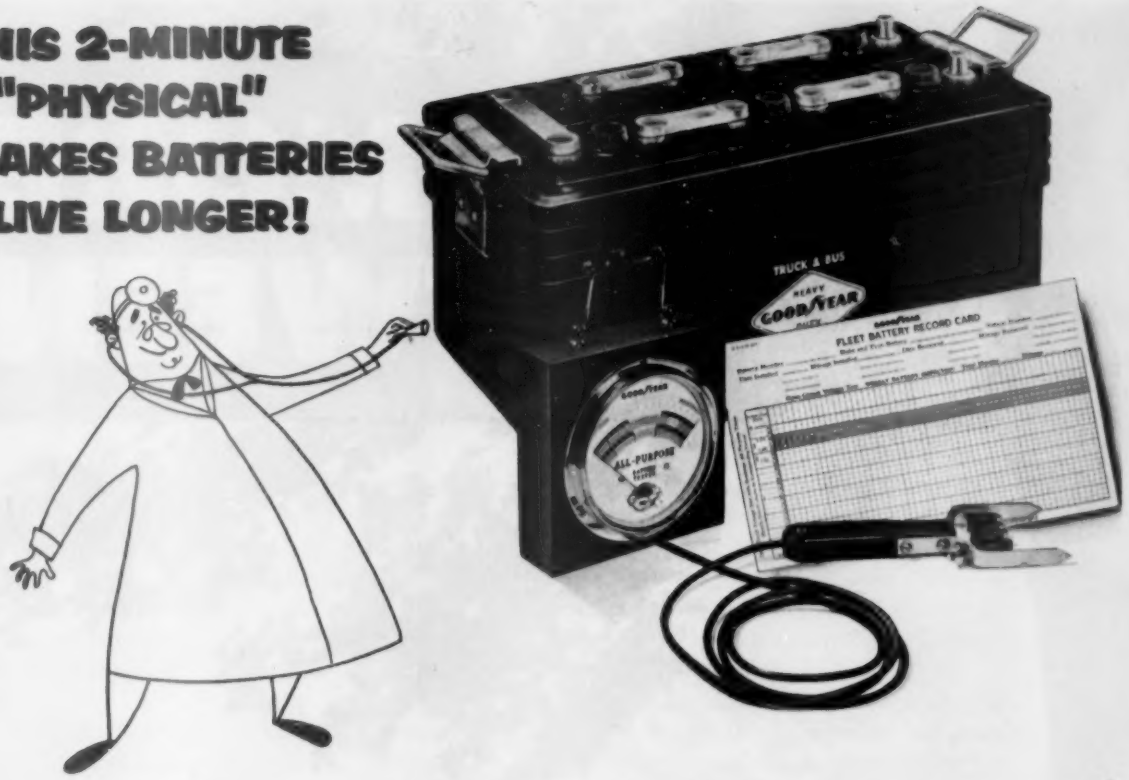
GO MIDLAND — AND STOP SAFELY!

THIS 2-MINUTE "PHYSICAL" MAKES BATTERIES LIVE LONGER!



OUTLINED below is a battery-saving program that fleet operators tell us is the easiest and most effective they ever had. It's called the Goodyear Fleet Battery Maintenance Plan and it prolongs battery life by eliminating the biggest cause of battery failure – incorrect voltage regulation.

Each week, batteries are checked with the Goodyear All-Purpose Tester (above) and the findings are recorded on a Fleet Battery Record Card—one for each battery. When the findings go in the green-colored "safety zone" (the stripe indicated on the card shown above), you know you're all right. A mark above or below this safety zone is a warning signal that voltage is too high or low and needs prompt adjustment.

By giving every fleet battery this 2-minute "physical" each week, you get longer battery life plus longer life from all your trucks' circuit parts.

And you save even more when you use the Goodyear Fleet Battery Maintenance Plan with Goodyear Heavy-Duty Truck and Bus or Diesel type batteries. You'll find the whole story on lower costs per mile in a booklet called "The Goodyear Fleet Battery Maintenance Manual." Clip the coupon below and send for it today. It's free.

Goodyear, Battery Department, Akron 16, Ohio

GOODYEAR

THE GREATEST NAME IN RUBBER

FREE BOOKLET TELLS HOW TO PROLONG BATTERY LIFE

THE GOODYEAR TIRE & RUBBER COMPANY, INC.
Dept. Q-7910, Akron 16, Ohio

Please send me a copy of the Goodyear Fleet Battery Maintenance Manual.

Name.....

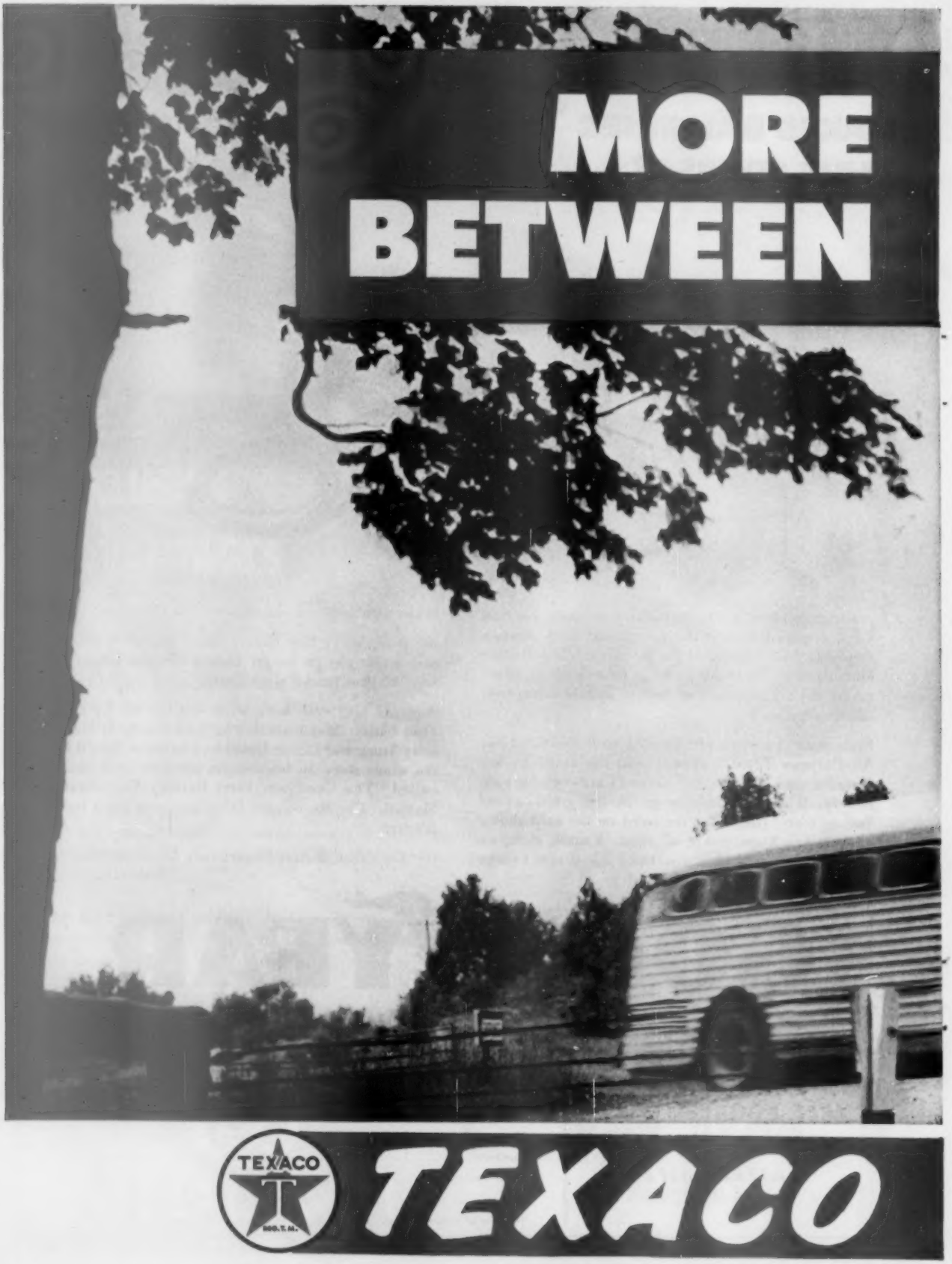
Company.....

Street Address.....

City.....Zone.....State.....

Number of Trucks in Fleet.....

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network—THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network


MORE
BETWEEN
TEXACO
TEXACO
REG. T. M.

MILES LUBE JOBS

IT'S A FACT that chassis lubricated with *Texaco Marfak* get extra hundreds of miles of protection against wear and rust. *Texaco Marfak* is the tough, long-lasting lubricant that won't squeeze out under heavy loads, won't jar out in rough service. It adds to the life of chassis parts, reduces your maintenance costs.

In wheel bearings, *Texaco Marfak Heavy Duty* gives the same long-lasting protection. It seals out dirt and moisture, seals itself in — assuring safer braking and longer wheel bearing life. No seasonal change is required.

MORE THAN 500 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD

In your engines, use heavy duty *Texaco D-303 Motor Oil* — the fully detergent and dispersive oil that keeps engines clean, assures low fuel consumption and low maintenance costs.

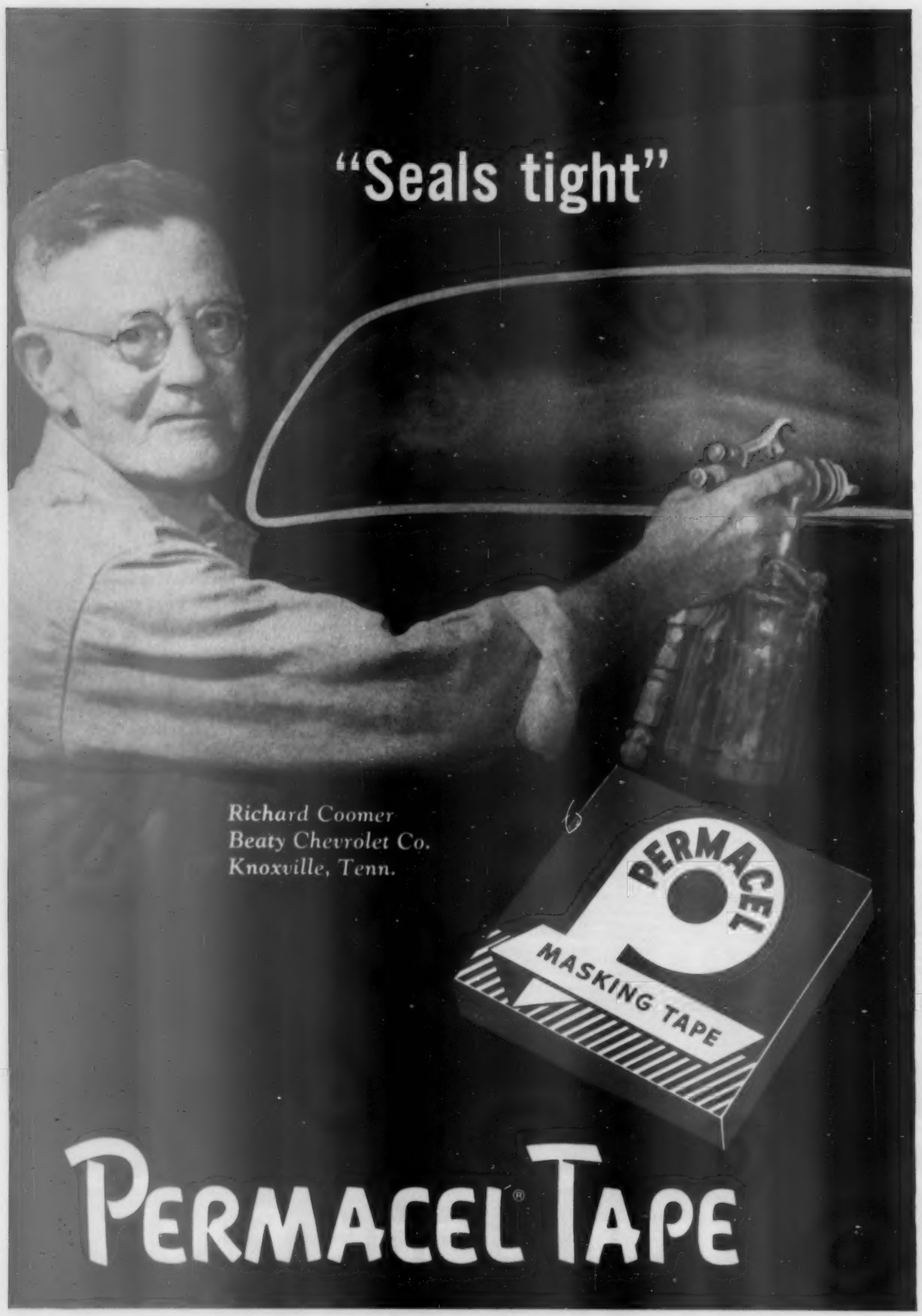
To keep transmissions and differentials running smoothly, lubricate with *Texaco Universal Gear Lubricant EP.*

A Texaco Lubrication Engineer will gladly explain how effective lubrication can reduce your fleet maintenance costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

☆ ☆ ☆

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels
FOR THE BUS INDUSTRY


"Seals tight"
Richard Coomer
Beaty Chevrolet Co.
Knoxville, Tenn.
PERMACEL
MASKING TAPE
PERMACEL® TAPE

The KEY WEST Report . . .

FROM A LOSS TO A PROFIT WITH BLUE BIRD TRAVELERS . . .

KEY WEST TRANSIT COMPANY, INC.
KEY WEST, FLORIDA

Mr. A. L. Luce, Jr.
Blue Bird Body Company
Fort Valley, Georgia

Dear Mr. Luce:

We are pleased to give you a brief progress and maintenance report on the six Blue Bird 31-passenger City buses bought from you in the past two years.

All of these buses are used in city service in Key West. They are operated an average of 18 hours a day, 7 days a week.

The record of service and low repair and maintenance is wonderful. A number of these six cylinder Ford motors have been in constant use for over 100,000 miles before a valve grinding job was necessary. One of these ran an estimated 225,000 miles and the cylinder head has not been removed nor have the bearings been tightened. Everybody knows that Ford parts are readily obtainable and the availability of mechanics to work on these units is an outstanding savings of convenience.

Last week we replaced our first broken spring in this group of buses.

Our gasoline mileage has been good. We get 6 to 7 miles per gallon. City service, as everyone knows, requires many stops and starts.

We have not had any body repairs except for small accidents.

Our drivers are well pleased with the ease of handling and the passengers compliment the riding comfort.

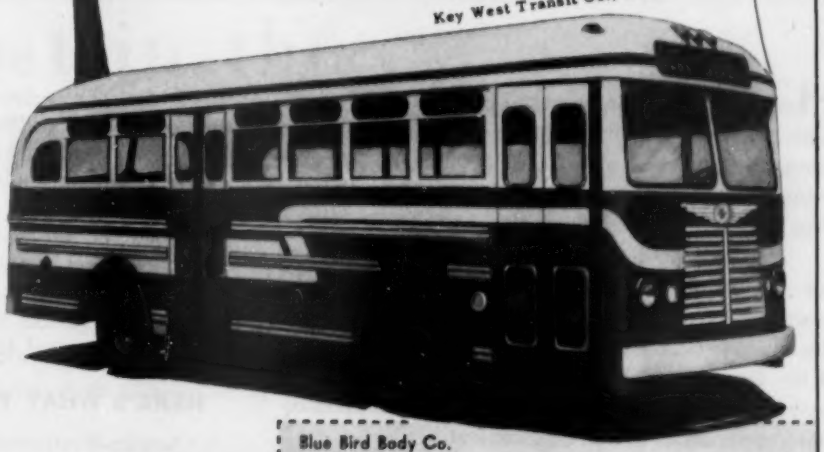
The use of these Blue Bird Buses changed our operations from a loss to a profit. We believe their low initial cost and low maintenance expense is the answer to many bus operators' problems.

Very truly yours,
R. B. Savage
Key West Transit Co., Inc.

Only a few years ago the Key West Transit Company was operating at a loss. By chance they heard of BLUE BIRD'S development of the ECONOMICAL TRAVELER and within two years had completely . . .

. . . REPLACED THE FLEET WITH

Blue Bird TRAVELERS



CHECK THESE FEATURES

- ✓ **Front position motor**
- ✓ **Your choice of FORD or HERCULES motors**
- ✓ **Easy handling**
- ✓ **No wasted space**
- ✓ **Easily available parts**

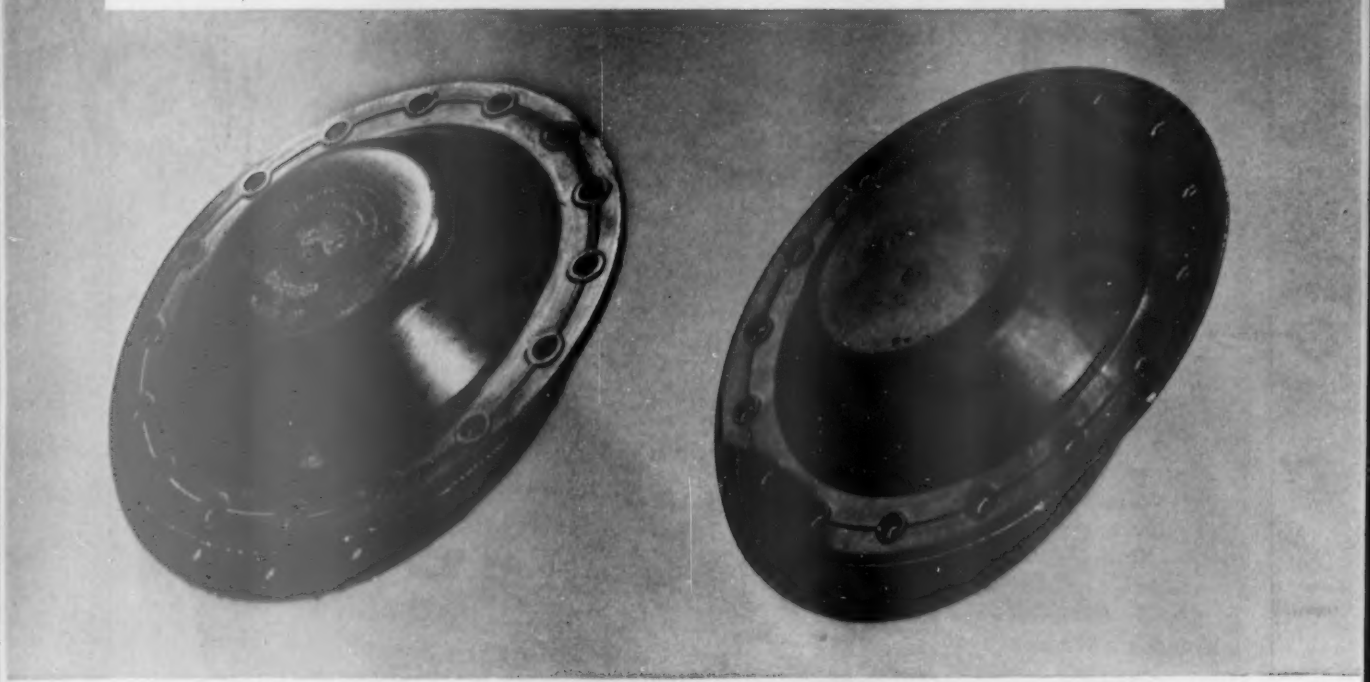
Blue Bird Body Co.
Fort Valley, Georgia
Gentlemen:
I am interested in information on the following:
____31 Pass., ____35 Pass., ____39 Pass. Blue Bird Traveler, for use in ____City Service, ____Suburban Service.

Name _____

Address _____

City _____ **State**

WHICH DIAPHRAGM IS THE phony?



Here is an actual unretouched photograph of a genuine Bendix-Westinghouse brake chamber diaphragm alongside a phony. Their apparent similarity will fool many buyers—*but from a performance standpoint they are easily distinguished.* Here's why.

The genuine Bendix-Westinghouse brake chamber diaphragm (on the left) is the result of thirty years' experience in the design and development of this vital air brake system component part. It is made of the finest materials, to the most exacting standards—performance proven over the years for a million or more applications before replacement.

The phony is an out-and-out counterfeit probably produced in a hidden back-alley shop. Made from questionable rubber and unsuitable fabric, it has a performance record of from only 5,000 to 28,000 applications. The counterfeiter placed the Bendix-Westinghouse name, address, trademark and piece number on untold thousands of these faulty units—and then the forgeries were jobbed across the country through parts dealers.

Some of the country's leading operators have been victimized by this counterfeiter.

You can be sure it will not happen to you when you buy genuine Bendix-Westinghouse replacement parts from an *authorized Bendix-Westinghouse distributor!*

HERE'S WHAT WE'RE DOING ABOUT IT

Bendix-Westinghouse took legal steps to prohibit the sale of counterfeit diaphragms immediately upon their discovery. The industry is being advised of the existence of the counterfeits through Bendix-Westinghouse advertising, bulletins and other publicity.

Bendix-Westinghouse

BENDIX-WESTINGHOUSE AIR BRAKES REG. U.S. PAT. OFF.

AUTOMOTIVE AIR BRAKE COMPANY

GENERAL OFFICES & FACTORY — ELYRIA, OHIO • BRANCHES — BERKELEY, CALIFORNIA AND OKLAHOMA CITY, OKLAHOMA

Fine performance is combined with low cost in the Long Torque Converter

LONG MANUFACTURING DIVISION • BORG-WARNER CORPORATION
DETROIT, MICH. AND WINDSOR, ONT.

50 Years of Quality Manufacturing for the Automotive Industry

LONG

BW

TORQUE CONVERTERS • CLUTCHES • RADIATORS • OIL COOLERS

IN GOOD TIMES AND BAD,

Youngstown Trolley Coaches

MAKE A PROFIT

● The Youngstown Municipal Railway Company will complete 18 years of trolley coach operation in December, 1954.

Those 18 years have seen many ups and downs in transit riding. But in good times and bad, the lines operated with trolley coaches have always returned a profit to the Youngstown system. In 1953, they earned a net profit *after* taxes and depreciation, of 11 cents for each mile of revenue operation.

Certainly, the trolley coaches operate on the heavily traveled lines. But they also bear the extra power cost and the added wear and tear from handling big passenger loads, and from holding to close headways.

Despite their age and heavy use, maintenance cost on the coaches has stayed reasonably low. It was 5.93 cents a revenue mile for body, electrical and chassis maintenance in 1953. Twenty-two of the original coaches, purchased in 1936 and 1937, are still operating.

The management of the Youngstown Municipal Railway Co. admits great satisfaction with the performance of its trolley coaches. They have been revenue-producers regardless of the times. The Company hopes it will be operating trolley coaches for many years to come because they are a good business investment.

Ohio Brass

MANSFIELD OHIO, U. S. A.

LINE MATERIAL AND CAR EQUIPMENT FOR TROLLEY COACHES AND STREETCARS

IN CANADA: CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.

C.D.BECK puts Alcoa Aluminum to work...

cuts dead weight 1,000 pounds!

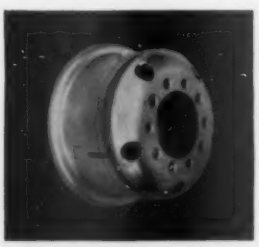
When their new "deck-and-a-half" model was introduced, C. D. Beck & Company of Sidney, Ohio, announced a savings in vehicle weight of 1,000 pounds . . . through extensive use of light-but-strong Alcoa® Aluminum! Fluted exterior panels for sides and front, interior roof panels, window sash, aisle sides and air-conditioning ducts are of Alcoa Aluminum!

The resulting weight savings mean more miles per gallon of fuel—and longer tire life!

For 25 years, Alcoa has worked with bus builders and operators, planning buses that yield greater profits because they cost less to run! Your Alcoa sales engineer can show you more than 60 places where Alcoa Aluminum will serve you this same way. His telephone number is listed under "Aluminum" in your classified directory. ALUMINUM COMPANY OF AMERICA, 1858-E Alcoa Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA



Alcoa Forged Aluminum Disc Wheels weigh up to 50 pounds less per wheel than corresponding steel wheels. Your saving in unsprung weight means reduced wear and tear on chassis and tires.

ALCOA ON TV brings the world to your armchair with "SEE IT NOW" featuring Edward R. Murrow, Tuesday evenings on most CBS-TV stations.

Sealed Power KromeX

Piston Ring Sets bring letters like these from fleet owners and garage men!

"Results have been outstanding"

"Since we have started to use Sealed Power KromeX Ring Sets in our cab fleet, some of our re-ring jobs have been driven over 88,000 miles and still have satisfactory oil control. We installed KromeX Ring Set in a 1950 cab with .023 cylinder taper seven weeks ago. There was no break-in problem and oil rate is one quart to 800 miles for 5700 miles, very satisfactory for a second re-ring job. Our results with KromeX Ring Sets have been oustanding."

John E. Titus, Shop Superintendent
Los Angeles, California

"Start easier, run cooler"

"We've been using Sealed Power KromeX Ring Sets ever since they've been on the market, in a good many cars. We've had very satisfactory service from them, and NO failures. The overhauled cars with Sealed Power KromeX Ring Sets start easier and run cooler than those with standard rings. We are very pleased with Sealed Power KromeX Ring Sets."

F. H. Stuart, Stuart & Fagan Garage
Pueblo, Colorado

"Well worth small additional cost"

"We have found Sealed Power KromeX Ring Sets to be very satisfactory and have had no failures or complaints of oil consumption during the break-in period. After explaining to our customers that KromeX gives so many more thousand miles of service with less friction and cylinder wear, we have experienced no difficulty in convincing them to pay the small additional cost for a better ring set."

B. L. Bradford, Bradford Garage
Continental, Ohio

"We recommend KromeX on every job"

"We have been using Sealed Power KromeX Ring Sets for over a year in all kinds of cars and trucks and in every installation have had complete satisfaction. We replaced rings in a 1950 Mercury with 65,000 miles on it, with cylinders tapered and worn. The KromeX Ring Set seated quickly and now has well over 70,000 more miles on it, still getting good gas and oil mileage. We recommend Sealed Power KromeX Ring Sets on every job."

Joe Locario, Owner
Southwest Motors, Houston, Texas

Factory seated for fast break-in!

SEALED POWER CORPORATION, MUSKEGON, MICHIGAN

Sealed Power Piston Rings

BEST IN NEW BUSES! BEST IN OLD BUSES!

Sealed Power Motor Parts—The Heart of the Engine • Rings, Pistons, Pins, Sleeves, Valves, Water Pumps

Wins riders with odorless, "Quiet Operating" propane

Operating results achieved since 1950 by Asbury Rapid Transit System, Los Angeles, are typical of those recorded by major transit companies with propane Twins.

They include substantial savings on fuel cost . . . estimated at more than $1,077 per bus for 1954.

Other propane advantages, listed by Asbury, are low upkeep, longer engine life, more power and smoother operation.

Of major importance, is rider popularity of odorless, quiet operating Flxible-Twins. Revenue, previously lost because of exhaust fumes, is being recaptured by propane which doesn't add to Los Angeles smog.

Asbury, logically plans to make future fleet replacements with propane coaches. The 10 new 52-passenger Flxible-Twins will be on the job soon—operating economically, making friends and influencing more riders to travel by bus.

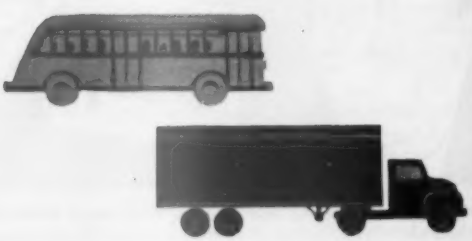
A-9389

Flxible

THE FLXIBLE COMPANY

LOUDONVILLE, OHIO

"give your drivers a good brake!"



Safe stops with today's increased speed, power and congested traffic conditions call for Thermoid Brake Blocks or Thermoid Heavy Duty Brake Linings.

Compounded under Thermoid's exclusive Dry Mix Process, originally developed for heavy duty amphibious military vehicles, Thermoid Brake Blocks and HD Linings meet the most rigid stopping tests, regardless of weather conditions or operating temperatures.

Thermoid

the standard of precision processing in brake lining, brake blocks, hydraulic fluid, cylinder assemblies, hydraulic brake parts.

Thermoid Company • Trenton, New Jersey

why everyone gets a treat

IMA RIDER THINKS IT'S PRETTY FINE to ride in a nice dry bus on a day like this. No puddles here to soil your hose and soak your feet. The deep grooves of Rub-Bub Dri-Foot design see to that.

JOE'S HAVING AN EASY TIME HERE because Rub-Bub platform plate goes down fast with either wood or machine screws.

when you buy

THE BOSS FINDS IT QUITE A TREAT to see costs drop for once. Always knew that Rub-Bub Heavy-Duty Platform Plate had a long life, but wasn't quite set for proof like this.

RUB·BUB®
safety platform plate

AND THIS IS YOU—thinking that award's a lot more likely to fall down than any of your riders. Rub-Bub flooring throughout helps keep 'em sure-footed and safe. Reduces accident claims.

EVERYBODY GAINS when you install Rub-Bub Heavy-Duty Safety Platform Plate. It's never slippery wet or dry . . . lasts the life of the average transit vehicle.

Rub-Bub Platform Plate is made from tough synthetic rubber that's bonded to expanded metal backing. Wide grooves drain off water faster . . . squeegee ribs grip shoe soles tighter. Order Rub-Bub platform plate now, and put an end to platform maintenance—permanently!

A-8721

RUB-BUB
Transportation Products

SAMUEL MOORE & CO. MANTUA, OHIO

IN CANADA | SAMUEL MOORE & CO. OF CANADA, LTD.
Represented in Canada exclusively by
RAILWAY & POWER ENG. CORP.

Coming at Full Speed

The ROAD-RUNNER

[Named after America's Most Versatile Bird]

The *NEW* Inter-City Bus . . . *EXPERIENCE-ENGINEERED* . . . *and Built by* FITZJOHN!

COMPLETELY NEW—FROM BEAK TO TAIL FEATHERS!!!

ANNOUNCING THE BIRTH OF A NEW BUS—a "bird" that's going places! This new coach was named after the handsome and clever Road-Runner, a bird which makes its home in the western part of the U.S.A. This amazing bird is very fast and can actually outrun a man or horse. The Fitzjohn ROAD-RUNNER is also plenty fast to meet any need or schedule.

The Road-Runner can also leap, scramble and fly—displaying wonderful maneauverability. In like manner, this unusual and fearless bird can make quick stops when it senses danger! *The Fitzjohn ROAD-RUNNER is also easy to manage and, with its unusual braking ability, it can stop quickly and safely when there's danger ahead!*

The Road-Runner doesn't need much water—stocking up every three or four days—and it eats the way it drinks. *Likewise, the Fitzjohn ROAD-RUNNER is easy on fuel—costing less to operate!*

Because it has all the qualities of this unusual and smart bird—*fast pick-up-and-go, maneuverability, quick stopability and low "fuel" consumption*—Fitzjohn's completely new bus has been aptly named "The ROAD-RUNNER."

●

The Fitzjohn ROAD-RUNNER is a brand new model with a brand new name. Produced by an established manufacturer with more than 30 years' experience in building city and inter-city buses.

EQUIPPED WITH THE NEW FITZJOHN *"MAGIC CARPET"* AIR-SUSPENSION SPRINGS THAT PROVIDE GREATER COMFORT, ELIMINATING NEEDLESS VIBRATION AND SHOCK—AND REDUCING UPKEEP COSTS!

Don't buy any bus until you learn more about the bus industry's newest coach—"The ROAD-RUNNER.

●

Send for photos of the new FITZJOHN ROAD-RUNNER and advance copies of specifications and learn more about this "bird" of a bus.

Fitzjohn also produces the popular CITYLINER—gasoline- or diesel-powered. It's the low-cost transit bus you can trust for economical operation.

Builders of Fine Motor Coaches for More Than Thirty Years!

FITZJOHN COACH COMPANY
MUSKEGON, MICHIGAN

IN MEXICO
Distribuidora de Omnibus Fitzjohn, S. A.
Ave. Morelos No. 83
Mexico City, Mexico

IN CUBA
Distribuidora de Omnibus Fitzjohn de Cuba, S. A.
E No. 310, esq. Calle 15
Vedado, Havana, Cuba

CANADIAN COMPANY—FITZJOHN COACH OF CANADA, LTD., Brantford, Ont.

"If it's made by Fitzjohn, it's made to make you money!"

NOW....

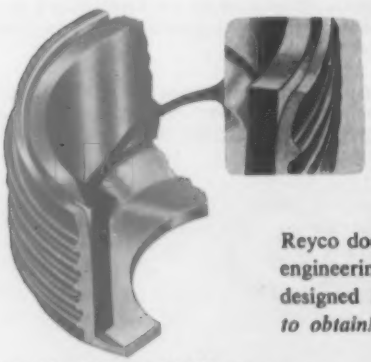
UP TO 25% BETTER BRAKING

WITH REYCO®

BRAKE DRUMS

When it's Reyco-engineered for you, it's the best brake drum in all the world for your operation!

Reyco brake drum designs may save you up to 25% or more in braking power lost when improperly engineered drums are unable to maintain full shoe contact under severe braking conditions.



This tendency toward "bell-mouthing" in many brake drums may reduce your effective braking area to as little as 75% of the original surface. Result: inadequate brakes creating excessive braking temperatures which in turn are directly responsible for too frequent brake adjustments, relining and drum replacements.

Reyco doesn't restrict manufacturing to a single style brake drum. Instead, Reyco engineering provides plain, ribbed and flanged brake drums, and from the one designed for your operation you'll receive *the best brake drum service possible to obtain!*

Copyright 1954, Reynolds Mfg. Co.

D-154

See Your Nearby Reyco Dealer

He'll help you cut brake drum maintenance costs and reduce costly down-time in your fleet!

REYNOLDS MANUFACTURING CO.

SPRINGFIELD, MISSOURI

H-540/V-8, the *Advanced Design* bus engine

For smoothness that pleases passengers!

A 37-passenger parlor coach built by C. D. Beck & Company, Sidney, Ohio, and powered by Le Roi H540/V-8.

Here's proof that a 200-hp power plant can be short enough to mount longitudinally — eliminating right-angle drive, and giving you a driveline that is more trouble-free and less expensive.

...C. D. Beck & Company uses the 200-hp LE ROI H540/V-8

...a 200-hp., heavy-duty engine that provides V-8 smoothness, faster acceleration, greater flexibility and economy.

"Smooth as silk" — that's what operators say about the Le Roi H540. They tell us that their drivers like the way this 200-hp., V-8 engine gets a bus away from a stop in transit service — gets it rolling for faster, smoother trips. On intercity jaunts, this power plant eats up the miles with effortless ease. And passengers like the H540, too. They feel that they get where they're going more quickly and with less confusion.

Well, there's a reason for this smoothness. You see, the Le Roi H540 is the first high-compression, valve-in-head, V-8 engine for heavy-duty bus and truck applications. It has a low weight-to-horsepower ratio of only six lbs. per hp. And it is short — only 45 inches long. That's about 14 inches shorter than an equivalent six-cylinder engine. So you get more power in a smaller space — have more room for passengers. And you can operate this advanced-design engine on gasoline or LPG.

For more information about the H540 — the engine that earns passenger goodwill with its smoothness and profits with its economy — write for our latest catalog.

CONDENSED H540 SPECIFICATIONS

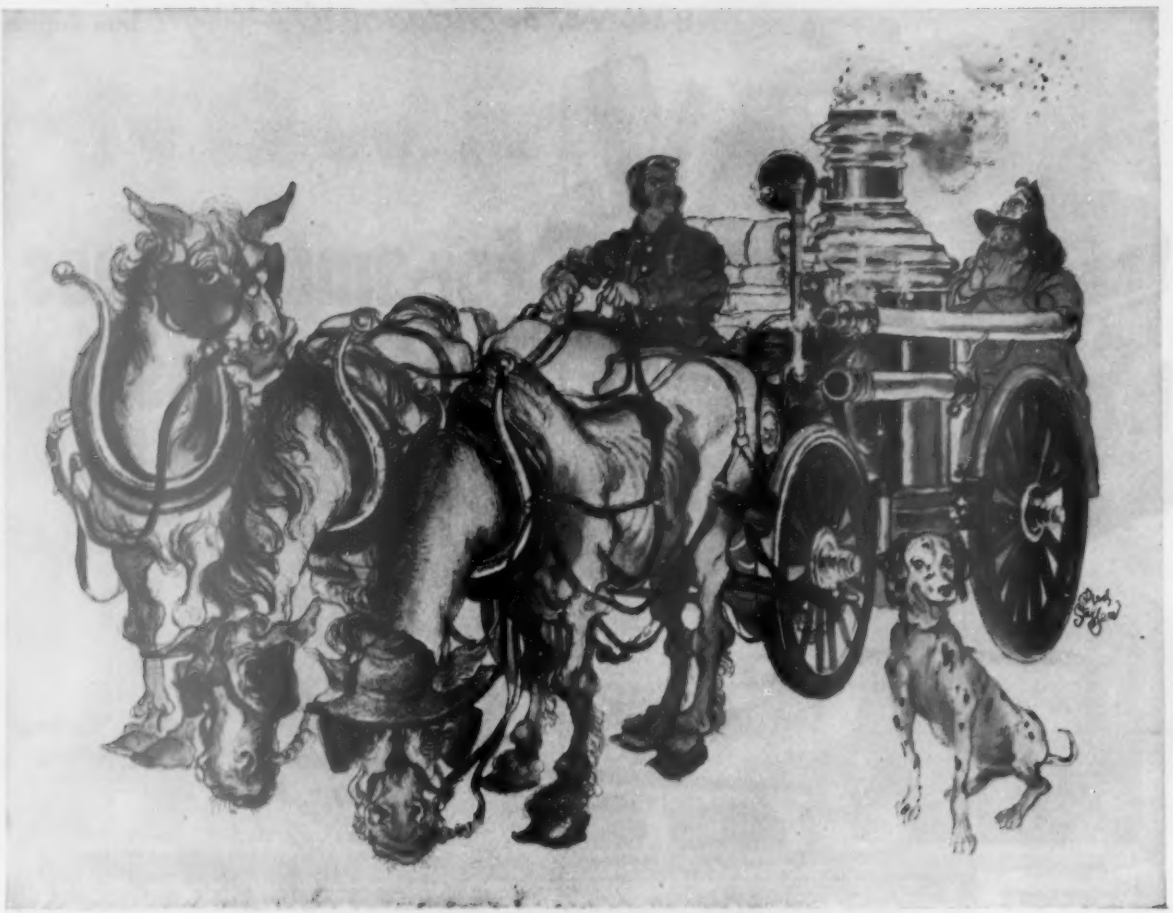
Number of cylinders	8
Bore and Stroke, inches	4½x4¼
Displacement, cubic inches	540
Horsepower, rated at rpm	207/3000
Speed range, rpm	800-3200
Weight bare, lbs.	1250

LE ROI COMPANY

E-96

A Subsidiary of Westinghouse Air Brake Co.

DEPT. BT54 • 3716 W. WISCONSIN AVE. • MILWAUKEE 8, WIS.



LOST HORSEPOWER can be dangerous...and costly!

When bells clang and sirens scream, you know that the fire engines in your community are on their way...and you're proud of that equipment, because it's ready to meet any emergency with full, responsive horsepower!

You'll be proud, too, of the full, responsive horsepower in every automobile engine that you have equipped with Perfect Circle 2-in-1 Chrome Piston Rings. For 2-in-1 gives sustained power and oil economy for *over twice as long* as old style rings. In the 2-in-1 set, both the top ring and the oil ring rails are plated with thick, solid chrome, giving wear protection throughout the entire area of ring travel.

Install Perfect Circle's 2-in-1 Chrome Rings on every re-ring job. Your customers will like the improved performance and oil economy! Perfect Circle Corporation, Hagerstown, Indiana; The Perfect Circle Co., Ltd., Toronto, Ontario.

Solid chrome plating on both top and bottom rings gives complete wear protection throughout entire area of ring travel. Rings are lapped-in at factory, making tedious break-in unnecessary.

Perfect Circle

2 in 1 chrome piston rings

THE STANDARD OF COMPARISON

BUS TRANSPORTATION

TOP TOPICS

HIGHLIGHTS OF LAST MINUTE DEVELOPMENTS IN THE BUS INDUSTRY AS WE GO TO PRESS

May, 1954

A BROADSIDE BY PRESIDENT J.A.B. BROADWATER of Capital Transit really seared the hides off the two civilian members of the District of Columbia PUC.

"Keep your noses out of management affairs, and I'll keep my nose out of regulatory matters," CTC's president told Chairman Robert McLaughlin and Robert Weston.

He fired the blast during PUC hearings into company finances and policies...especially CTC's plan to redeem almost $4 million in bonds and pay a $384,000 quarterly dividend.

Capital Transit won the first court battle...but the Commission has already filed an appeal.

HOUSTON TRANSIT AVERTED A STRIKE AT THE LAST MINUTE when the city's mayor proposed a five-cent fare increase...to 20 cents...on a 90-day trial basis.

Council promptly began debate on the mayor's plan...but indications at press time were that it would go through.

At the end of the 90-day period company earnings will be re-examined...and an adjustment made, if necessary.

PACIFIC GREYHOUND ROARED INTO ACTION AGAINST DRIVERS who refused to operate 50 new buses. PGL slapped a $1,500-a-day damage suit against the drivers...charged the union with breach of contract.

The drivers claim the buses are overwidth and unsafe.

PGL snorts at that one...points out that they're no wider than other buses...have been okayed by the state PUC and the Division of Highways.

The real reason, says PGL: drivers are miffed because the company hired an outside firm to drive the new buses from GM's plant in Pontiac, Mich.

IT'S 'INDIANAPOLIS TRANSIT SYSTEM' NOW--no longer Indianapolis Railways, Inc. Stockholders voted the change in company name in line with the national trend towards taking the term "rail" out of transit names when they no longer run rail vehicles.

FITZJOHN COACH FEATURES 'MAGIC CARPET' AIR SUSPENSION springs on its new 37-passenger intercity job, named "The Road-Runner."

Coaches will be diesel and gas powered...were set for display in Denver on May 12-14 during the annual meeting of the National Trailways System.

TEN BUCKS DISCOUNT FOR RIDING A BUS...that's what Baltimore Transit riders can get under a new transit credit slip system starting in Baltimore earlier this month.

Slips will be distributed to riders between 10 A.M. and 3 P.M....can be used the same day at any of 25 stores listed on the back of the slip, provided the discount doesn't exceed $10.

An outside promotion house originated the plan...picked BTC as the first transit firm for a tryout. But preliminary feelers have already been sent to other companies.

IF YOU'RE RUNNING CHARTERS TO WASHINGTON, D.C. you'll likely run into trouble with a law requiring that licensed guides accompany all sightseeing bus tours in the District.

It's an old law...but nobody ever bothered about enforcing it...until this year.

If it affects you, you might try writing letters of protest to members of the District of Columbia Committee. Stress the value of Capitol City tours from the point of view of good citizenship...and the necessity of cutting them out if undue expense is involved.

HIGHER FARES DIDN'T DO THE JOB FOR DENVER TRAMWAY. A raise that went into effect January 13 produced 45.1 per cent less revenue in the first quarter than Tram had anticipated.

Old fares were 13 cents cash, two tokens for a quarter. At the new rate of 15 cents and four tokens for 55 cents, anticipated revenue was $171,577...but actual operating income was $94,043.

The reason: Tram figured 40 per cent of the riders would pay cash and 60 per cent would use the tokens. Instead, only 30 per cent paid cash and the rest used the bargain rate.

CHICAGO TRANSIT AUTHORITY ISN'T TAKING THAT CHANCE. Streetcar, bus, elevated and subway fares went up to a straight 20 cents,

The purchase of surface line tokens at 17 cents, and subway and elevated tokens at 18 cents, was completely eliminated.

"OH THE SHAME OF IT ALL", or words to that effect, were expressed by TWU's Mike Quill as his union bowed to an arbitrator's

award on a pension dispute with Fifth Avenue Coach and New York City Omnibus.

Mike said he was amazed that anyone might think TWU would pull a strike in defiance of its no-strike contract... failed to mention why, in that case, the union had threatened a walkout in the first place.

ATA HELD A WHOPPING MEETING IN NEW YORK, with more than 375 members and guests showing up for the four-day conference.

The transit field was pretty well covered at the meeting, with special emphasis put on Transit Pars.

We'll tell the full story...complete with pictures...in next month's issue.

DIG THIS NEW FARE SYSTEM requested by St. Thomas Coach Lines In Ontario. It's been approved by the City Council...needs Municipal Board approval to become effective. Here's the way we hear it.

An adult fare will be 12 cents, but if the bus driver has to make change the fare is 15 cents. Two adults can ride for a quarter. Student fares are seven cents with the right change and ten cents without.

Present fares are a dime for adults and a nickel for students, with or without the correct change.

GREYHOUND HAS ADDED SOMETHING NEW TO LONG-DISTANCE RUNS. It's a "sleep-over" service on runs between Chicago and San Francisco and St. Louis and San Francisco.

Under this new service, Greyhound takes over all the chore of arranging for hotel space. When the rider purchases a ticket a single or double room--whichever is desired--is automatically reserved for him.

The idea was based on the habits of riders themselves, who frequently stop overnight at hotels along the way so they can see day by day the countryside through which they pass.

ALLEN WAGNER IS ATA'S NEW DIRECTOR OF PUBLIC INFORMATION, on a full-time basis. John B. Lewis, who has served as part-time consultant, will continue to handle special assignments after August 1.

Wagner has been doing executive PR jobs for the federal government, and has served as public relations director for various associations and large business firms.

The change was made on recommendation of ATA's policy committee, which felt that the Association's vital public information program now needs the guidance of a full-time director.

Transit Pars . . .
A Tool for Cost Control

TRANSIT REVENUES are moving upwards . . . but in many operations profits aren't following suit.

The reason could be that some operators aren't controlling costs as wisely as others. There's one segment of the industry that thinks it has a solution . . .

TRANSIT PARS!

Whether you use Pars or not, it's hard to disagree with this statement, made by Pars leader Paul Dittmar . . . "There are two Pars that can't be laughed off — profit and cost."

If you don't use Pars . . . and you're not making a profit . . . you've got no alibi, says Dittmar.

Sixty operators in the industry are now exchanging complete information under the ATA Pars program.

That, of course, is the key — exchanging information!

To make Pars work for you you've got to give as much as you take . . . but you'll be giving . . . and taking . . . in impressive company . . .

National City Lines . . . St. Louis PS . . . Twin Cities . . . Louisville Transit . . . Niagara Frontier . . .

They all use Transit Pars . . . and they all write in black ink.

THE EDITORS

"Transit is your problem, too," writes John Baine to the nation's business interests. In the article below, the St. Louis PS president is emphatic on the point that . . .

Transit Can Save Our Cities . . . But it Needs Help

"We're with you," says Max Wehrly in his marginal comments. He's executive director of the Urban Land Institute, representing business, real estate and industrial groups

I BELIEVE MOST OF US are familiar with the vital part transit plays in the financial stability and business activity of downtown city areas. But often, in our preoccupation with everyday business affairs, we're likely to lose sight of it.

The importance of transit to the community is well illustrated by a recent government-sponsored parking survey made in St. Louis.

It showed that our company carries more than 41 per cent of the people who enter the shopping district between the hours of 8 A.M. and 6 P.M. and we do it with less than 3½ per cent of the total vehicles!

If these transit riders used private automobiles they'd have needed 72,000 cars—a 70 per cent increase in the number of autos in the business district.

That would mean complete traffic paralysis!

Without transit, downtown areas become crowded with cars . . . but it's crowds of people, not crowds of cars, that create and maintain downtown city values.

In this shift from mass transportation to the private automobile we have lost the ability to attract crowds of people. The reason is that we've neglected the one phase of our urban efficiency without which the rest cannot function—freedom of access.

Freedom of access simply means the easy movement of people and goods—not vehicles, not autos, not trucks, not buses, not taxicabs—but people and merchandise!

This is what we must keep in our minds as we consider the traffic-transit-parking problems which have brought our shopping areas into chaos.

Decentralization—the disintegration of those shopping centers—has already started.

It's plaguing transit . . . it's plaguing merchants . . . it's plaguing city officials who are justifiably worried about the loss in taxes from high-value downtown property. All too often, too, decentralization leads to the creation of equally serious traffic congestion in the new suburban locations!

This percentage is fairly typical for cities in the St. Louis population group. In Los Angeles, an "automobile town," the percentage is about 38.

This would take about 1½ million lineal feet of street or 135 miles two lanes wide with car bumper to bumper. Do you have that much?

"Decentralization" is a misnomer. We're experiencing urban growth and redistribution. The automobile is only one factor in this process. Fixed city boundaries can no longer be used as a yardstick.

Continued on next page

I would say amen to this. If half as much thought and a quarter of the money had been spent in providing convenient access for the pedestrian to use public transit on our new expressways, we would get somewhere.

What is included in urban values? Within what area and between what years? Is the decline measured in sales or in assessed values, and when? Does it cover land, buildings or both? The results are quite different. I don't believe we can generalize too much on this point. Volume of business done might be a better indicator.

I would add the provision of "transit streets"; i.e., streets to be used exclusively for public transit vehicles, at least during peak traffic periods.

Perimeter parking can be made to work and can become self-supporting. Cleveland is an outstanding example. The more traffic that you can intercept or divert, the less traffic will clutter up the central core area.

And yet, the automobile in itself is not the true villain. It's simply the manner in which it's used. Truly, the auto is here to stay. We must accept that fact in planning a way out of this mess.

Much of that planning up to now has been clouded by a lack of balance . . . by improper emphasis . . . by measures designed to encourage greater auto use at the expense of mass transit.

Buildings have been torn down. Streets have been widened. Businesses have been relocated. New Parkways and expressways have been built. Big garages in high-cost downtown sections have been erected.

We are even going underground in some cities in our almost pathetic attempt to take care of the auto. But like the schmoos in the L'il Abner comic strip, every new day seems to bring another litter.

We can't shut our eyes and hope that the decline in urban values will just cease.

The obvious question in the minds of business leaders should be: "It's our problem too. What can we do to help?"

First, let's consider some of the measures which can and should be adopted.

1. A master traffic plan heads the list. It should be based not only on a study of general traffic needs, but on the needs of the transit system as well.

It should include parking regulations, provision for oneway streets, restriction of truck movements in the peak periods, expanded traffic signal systems and the progressive elimination of that "bad boy" of traffic tangles—the left turn.

In crusading for the master traffic plan in a city businessmen must establish the fact that street parking is not a right, but a privilege to be extended only when a street is not needed for moving vehicles.

Opening up of the curb land would make possible a plan which members of the transit industry have urged on an experimental basis—assigning the curb lane exclusively to buses during the rush periods only.

2. Perimeter parking is next on the list of things to be encouraged by downtown interests.

Wilbur Smith of the Bureau of Highway Traffic at Yale University recently pointed out that "some cities are attempting to provide parking lots on very valuable land right in the center of the business area. This idea of inviting more and more cars to come into the center of the business district is obviously all wrong.

"Every form of downtown private car driving and parking should be discouraged in every possible way."

In conjunction with perimeter parking, the next step is . . .

3. Park-and-ride plans, which, in the opinion of many experts, offer a partial solution of the traffic problem.

With the co-operation of city officials in St. Louis, we selected park-ride lots, located in a park, about five miles distant from the center of town, sufficient to permit full use of express service.

Between 7 A.M. and 6 P.M. we operate our "park-ride limited"

on five-minute headways during peak hours and on 15 minute service during non-rush hours.

No parking charge is made . . . and the round-trip express fare is 35 cents. It was given a hard promotion job . . . with the result that patronage has grown from 100 autos and 130 passengers the first day to more than 500 cars and 700 passengers a day.

That's a lot of cars out of the downtown business area! It is our belief that the support of this sort of program must include some form of subsidy by sources other than the transit company in order to keep the cost to the passenger at an attractive level.

The idea of an auto parking subsidy is by no means new. In this case, however, either the city government or an organization of downtown merchants and businessmen must join with the transit company to provide the parking areas free or at very small cost.

4. Super-highways or expressways are in the talking stage for just about every city. They present another opportunity for businessmen to help guide the thinking of their communities. These new super-roads should be used by both transit and private vehicles!

But simply permitting buses to use the expressways is not enough. To obtain maximum efficiency for motorists as well as transit riders center strips should be reserved for the use of express buses during peak periods.

This, I believe, is the most economical way to achieve a form of rapid transit that will help persuade motorists to make the switch to transit because of speed and convenience factors.

Expressways should also include provisions for sizable parking areas along the route as a means of establishing a form of park-ride operation along the new highways.

5. A co-operative educational program by transit and business leaders is the next step. That program must be directed toward teaching people to use their automobiles more intelligently.

The same degree of selling effort which has been responsible for the tremendous growth in auto ownership must now be directed toward this program.

Even auto makers are realizing this fact. In a recent interview Henry Ford admitted that we are approaching a saturation point. "People may get sore at traffic," he said, "and refuse to drive cars."

6. Better treatment for transit by the community is the last, and one of the most important ways in which business can help preserve downtown values.

A. J. Stewart, Louisville banker and member of the national association of real estate boards, recognized this need when he said:

"Altogether too much demagoguery enters into the question of transit fares. Where necessary, these fares should be promptly adjusted to meet rapidly expanding labor and other costs."

He also urged that "special taxes levied on transit companies for use of city streets, and not paid by other users of streets, should therefore be removed."

The transit company is one of a community's greatest assets. But it must have the support of business for its basic needs if it is to function properly.

The problem is too important for business leaders to stand by and do nothing!

Express buses can operate effectively within the conventional lanes of an expressway if proper provisions for marginal loading and unloading are made in the form of adequate, convenient and attractive turnouts and loading platforms. The center strip of a freeway is a safety feature and should be retained as such.

Transit systems have too often been the whipping boys of city and state politics. It is also true that a few "black sheep" of the transit industry have helped to make this possible.

It's going to require the best efforts of all segments of the community, public, business and transit working together to reach satisfactory balance in terms of modern trends in urban growth and development. This includes removal of numerous road blocks of which "special taxes" is but one.

Plagued by low depreciation and high income taxes, Atlanta Transit is selling its assets to a new company, establishing a broader tax base and increasing vehicle replacement funds. Net result is that . . .

Atlanta Transit Solves Its

ATLANTA'S KNOTTY PROBLEM of how to accumulate sufficient equipment replacement funds to keep its transit fleet modernized is apparently on the way to solution.

It will be accomplished through the sale of the assets of the present Atlanta Transit Company to a new company known as the Atlanta Transit System, Inc. The price: $5,000,000.

As a result of the sale, the new company will be relieved of approximately $200,000 annually in Federal income taxes now paid by the present Atlanta transit company.

The authority plan proposed by the State Senate Transit Study Committee several months ago is now considered a "dead duck." (see BT. Jan. 1954, p. 32.)

The authority, which would have required a state constitutional amendment, would have purchased all equipment from the Atlanta Transit Company, leased it back to the company, and acquired new equipment for lease to the company.

The plan called for remission of city and state taxes, and freeing the authority from control by the Georgia Public Service Commission.

The authority plan would have meant a loss of tax revenue to the city of about $250,000 annually.

As a result, there was unofficial city opposition to the plan. There was state opposition because of the proposed remission of state taxes under the plan. There was broad public disapproval because the plan would place the transit company in a special category with respect to local and state taxes.

The pertinent facts about the new proposal are these:

The new company, Atlanta Transit System, Inc., will purchase the old company for $5,000,000, under a long-term contract.

The debt will be repayable over a long period of years, without interest, at about $175,000 annually.

The sale involves all of the assets remaining in possession of the present company which were not included in the sale-and-lease-back arrangement of 1951.

This consists of 256 vehicles, the electric overhead lines, various plant, equipment and supplies, and small pieces of real estate.

The present transit company found itself unable under its present tax structure to replace equipment as it wore out. Allowable depreciation was an insufficient $120,000 annually. Federal income taxes came to about $200,000 a year.

Under the proposed setup, the new company will enjoy a broader tax base, allowing for the accumulation of more equipment replacement funds.

Depreciation for the new company will be at the rate of about $320,000 annually, and federal income taxes will be virtually wiped out.

In addition to buying the vehicles and other assets of Atlanta Transit Company, the new company also will assume the lease operation of 334 newer vehicles which Atlanta Transit Company sold to the Atlanta Traffic Equipment Co. and leased back in 1951.

That deal, also a tax-saving transaction, involved about half the property for which the company was not able to obtain adequate depreciation allowances.

By selling vehicles and then leasing them back, lease rates reflecting replacement cost became a fully allowable expense.

That transaction took care of replacement costs for about half of the system, but it also necessitated a fare increase.

The present sale of the remaining assets of the company will provide replacement funds for the other half, but without a fare increase.

The proposed sale of the present company to the new company would end the difficulties the company has

Here's how the proposed sale will work out:

	Atlanta Transit Co. (present company)	Atlanta Transit System (new company)	
Gross Revenues	$9,000,000	$9,000,000	
Expenses	8,500,000	8,675,000	(including $175,000 annual payment on sale debt)
Depreciation	120,000	320,000	
Federal income taxes	200,000	(virtually none)	
Net profit	180,000	5,000	(This includes nominal federal income taxes)

Equipment Financing Problems

had in obtaining adequate replacement funds since the system was sold by the Georgia Power Company in 1950 to Atlanta Transit Company.

The entire system, valued at approximately $11,000,000, was sold then for only $4,800,000. As a result of this, depreciation (replacement) allowances and income taxes were afterwards based on that low purchase price.

This resulted in high federal income taxes. At the same time, depreciation allowances were far too low to pay for new equipment because under the law the Georgia PSC held the allowance to an income tax, or corporate purchase price, basis.

The proposed purchase price of $5,000,000 for the present company and its assets is considerably greater than the price paid in 1950 for the entire system, including vehicles now under lease.

In buying at this price, the new Atlanta Transit System, Inc. will be able to establish a new, higher corporate purchase price and tax base. On the new $5,000,000 valuation, the annual depreciation allowed under federal income tax regulations would virtually eliminate payment of federal income taxes by the new company.

The mechanics of this write-off, according to reliable sources in Atlanta, would be no different than any other method of depreciating property as allowed under existing tax laws.

The transit company officials do not know what the internal revenue department's attitude will be. No opinion, official or otherwise, has been sought by the new company from government tax officials.

The reason: the company believes it's on solid ground, has had plenty of legal advice to support that belief. The entire plan for the purchase of the present company by the new company has been worked out within the framework of existing tax laws.

Company officials believe that, if litigation with the Government develops in the next few years, they will cross that bridge when they come to it.

As this report was written, it was expected that actual transfer of the assets of the present company to the new company would take place around May 1.

No serious opposition was anticipated from any source.

The present Atlanta Transit Company will continue in existence as a non-operating company whose only asset will be the $5,000,000 mortgage on the equipment sold to the new company.

Jackson Dick, president of the present company, will not be an officer or stockholder in the new company. He is the only top executive who will remain with the old company.

Six other executives will sever all connections with the old company, including stock ownership, and join the new company in similar capacities.

H. L. Sommerville, assistant president of the old firm, becomes president of the new company. Other officers will be: John Gerson, executive vice president and general manager; Henry Taylor, secretary-treasurer; and W. C. Maynard, assistant general manager.

With Mr. Sommerville, the other officers have subscribed entirely to the $25,000 capital stock of the new company.

Present plans provide for public representation on the new company's 12-man board of directors.

The board will consist of five stockholders of the new company, Granger Hansell, attorney who heads the controlling group of stockholders of the old company, together with one other old-company stockholder, and five public members.

Invitations will be extended to various Atlanta civic and business groups to nominate the public members of the board of the New Atlanta Transit System, Inc.

Eight Shop Ideas Which Can Help

• Ingenuity and initiative, as well as mechanical skill, are the hallmarks of good maintenance men today. They are a must if each shop dollar is to count.

• THE EIGHT IDEAS illustrated and described here are typical of the ingenuity with which bus maintenance men tackle their jobs.

Each one of these ideas has one thing in common: the reduction of

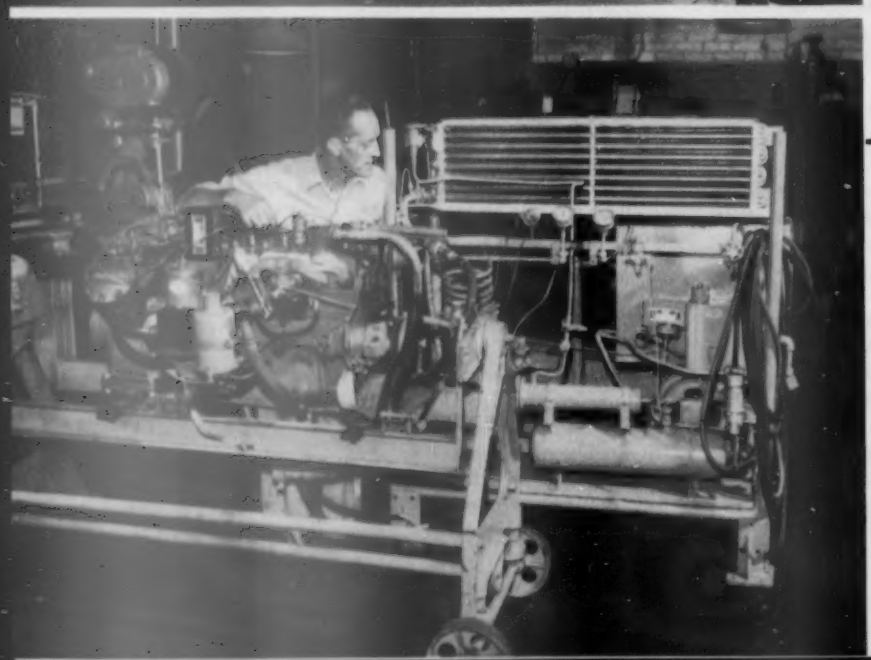
IDEA 1

Increased tire mileage is one of the important results from properly balanced wheels.

New England Greyhound devised a special spindle set on which all wheels are checked for balance before tires are mounted.

This spindle, shown in the photo to the left, is handily installed in the tire department.

Besides accomplishing an all-important increase in tire mileage, this equipment provides for considerable savings in time and labor since, without it, wheels would have to be balanced while the coach is on the service line.



IDEA 2

New England Greyhound shop personnel are adept at building shop equipment not available on the market, or available only at high cost.

The photo on the left shows a special stand built in the NEG shop to handle air conditioning units removed from coaches.

This stand is also used to run in an air conditioning unit to test for oil and water leaks after the unit has been rebuilt.

The air conditioning system is also hooked up to test all instruments before the unit is installed in the coach.

Keep Your Maintenance Cost Down

maintenance cost. This objective is accomplished in some instances through the use of special tools of both the manufactured and home-made variety.

In other instances maintenance costs are brought down through the employment of some labor saving short cut.

In still others, some ingeni us salvage process has been able to restore some otherwise worn out part.

All of these ideas are practical, can be duplicated in any shop where the maintenance dollar must be watched closely.

These ideas will save you money, time and labor.

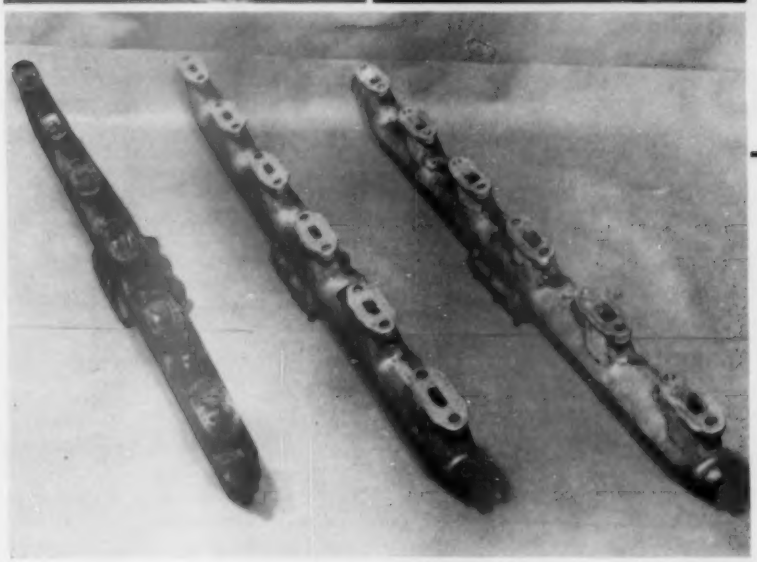
IDEA 3

Two exceptions to the conventional way of replenishing the crankcase oil supply are shown in photos on the left.

Photo at far left shows how Harrisburg Railways has built a pump type portable oil dispenser around an ordinary dispensing pump mounted on a 25-gallon drum. One turn of the pump handle puts a quart of oil in the crankcase . . . with no mess or drip.

The rig on the right was devised by Kansas City Public Service, and is somewhat more fancy.

It employs a high-pressure oil dispensing hose and is metered at the point of delivery by an Alemite hand meter. This assures accurate measurement of the oil added to each bus and at the same time prevents contamination of motor oil.



IDEA 4

The water manifold at far left is badly clogged, with flanges eaten away by corrosion. Such a manifold is apparently no longer useful—but not to the St. Louis Public Service shop boys.

Manifold in the center shows what St. Louis does in this case. It has been cleaned out internally and new flanges welded on.

Finished product is at right with flange openings ground out to original size. Net result . . . a new manifold at a fraction of the cost of a new one.

Continued on next page

IDEA 5

Another smart idea from the New England Greyhound shop is shown at the left.

NEG paints all wheels during minor inspection. A special hood is put in place during the application of Greyhound blue to the lug area after the wheel area is painted white.

This eliminates the need for masking tape, saves the time and labor normally used in proper positioning of such tape.

Note the mask worn by the painter, a good safety precaution.

IDEA 6

Decals have solved a problem for St. Joseph Light & Power Co. Hand lettering of that long name on the sides of each bus would take hours of a painter's time. Besides, the company uses an interesting trade mark in conjunction with its name. The five photos on the right show a lapse of five minutes between the first and final step in applying a decal job.

STEP ONE—Bus panel surface has been coated with the special decal cement and the decal is ready to be applied to the area.

STEP TWO—A special rubber roller is used to iron out the wrinkles so that the decal will lie flat and smooth when dry.

STEP THREE—Heavy backing is moistened and removed, after which thin membrane covering the decal is rolled again.

STEP FOUR—After assurance that no water or air bubbles remain, the thin protecting membrane is moistened and peeled off.

STEP FIVE—Colorful decal is dabbed dry with clean, soft chamois. Clear varnish or lacquer can be applied, but is not needed.

IDEA 7

The portable brake drum lathe shown at left is an important tool in the brake drum machining job done by Capital Transit in Washington.

Whenever a set of new brake blocks are installed, the brake drums are "cleaned up."

This machine is designed so that the trueing up can be performed with the drum attached to the hub and wheel. This eliminates possibility of distortion errors.

A special carbaloy-tipped cutting tool eliminates the necessity for grinding. It cuts heat check spots, and gives an exceedingly smooth finish. The rheostat aids in this.

But smooth drums are only half the story of efficient brakes. Brake blocks must make perfect contact when air is applied. To accomplish that, here is . . .

IDEA 8

. . . referred to as the "Brake Doktor" by Capitol Transit, which uses it as a companion tool to the portable brake drum lathe.

This tool (shown at left) is nothing more than a brake shoe grinder. With this portable tool the blocks are trued up in place on the hub so they mate exactly with the drums which already have been machined.

This method not only assures good brakes at all times but also enables Capital Transit to get maximum life out of brake lining and drums.

With each of its 900 buses operating some 25,000 bus miles a year in the ultra-heavy traffic of the Nation's capital, CTC insists on efficient braking system.

And to see that this is accomplished, the company has equipped each of its seven garages with the most modern facilities to do a quick and accurate brake relining and brake drum machining job.

Lost or damaged baggage

How Higher Courts Ruled On

On-job employee injury

One rider hurt by another

• DURING THE PAST YEAR higher courts throughout the nation returned many unusually important decisions affecting bus companies.

A brief review of these outstanding law suits may help readers avoid expensive legal action . . . or win unavoidable suits. Complete decisions can be read in any good library.

Here are some of the questions and the verdicts:

QUESTION: Is a state law regulating baggage liability always applicable in a suit against a bus company for loss of baggage?

ANSWER: No.

A higher court held, in Continental Bus System, Inc. v. Ansel, 253 S.W. (2d) 959, that the federal law, under 49 U.S.C.A., is applicable to motor carriers and provides that a carrier may limit its liability for the loss or damage of baggage carried in interstate travel.

The validity of this federal law on limitation of baggage liability has been upheld by the Supreme Court of the United States in Harrisburg and San Antonio R. Co. v. Woodbury, 254 U.S. 357.

During this case another very important point was decided by the Texas higher court . . .

QUESTION: Is a state court obligated to admit as evidence records filed by a bus company with the Interstate Commerce Commission?

ANSWER: Yes.

Ansel's attorneys had claimed that he was entitled to full value of $509 for the baggage which had been lost by the company.

The bus company had claimed that its liability was controlled by federal laws limiting liability to $25, as printed on the ticket.

Ansel's lawyers disagreed and contended that the federal laws were not applicable because a Texas state law clearly contradicts the federal law, and does not authorize the bus firm to limit liability for lost or damaged baggage.

The lower court agreed with Ansel's attorneys and refused to accept certified copies of the tariff baggage rules filed with ICC by the bus company.

The company was ordered to pay full value of $509 for the lost baggage.

The higher court, however, reversed the decision and said:

"The case is therefore controlled by Congressional acts and the rules of law applicable to interstate commerce as interpreted by federal courts. Under Interstate Commerce Act, a carrier may limit its liability for loss or destruction of a passenger's baggage carried in interstate commerce."

The court also held that lower courts must accept certified ICC records as evidence. "While, generally speaking, a state has the right to prescribe the rules of evidence for its courts, this rule has no application where a federal question is involved, as to which federal acts and decisions are controlling."

By Leo T. Parker
Attorney at Law

Crash with private ambulance

These Important Questions

Altered damage awards

Lost or destroyed records

QUESTION: Can an injured employee collect compensation under the State Workmen's Compensation Act unless he can prove by witnesses that his injury occurred while working at his regular job?

ANSWER: No.

For example, in Ash v. Great Lakes Greyhound Lines, 60 N.W. (2d) 166, it was shown that an employee of the bus company suffered an injury and filed a claim for compensation.

He testified that the disablement occurred "on or about November of 1951," and that the hernia was discovered on or about January 18, 1952.

He also testified that he was 68 years of age, and that he had been in the employ of the Great Lakes Greyhound Lines for approximately 25 years.

However, as the employee had no witnesses to prove that the injury he suffered occurred while he was at his regular work, the high court held that compensation was not allowable.

Here is what the court said:

"The mere fact that the plaintiff (employee) moved the brake machine in the manner described by him does not justify an inference that he suffered a strain at the time. The burden rested on the plaintiff to offer proof, in support of his claim, fairly and reasonably justifying the conclusion that the hernia resulted from a strain, arising out of and in the course of employment."

QUESTION: When, and under what circumstances, can a bus company be held liable for injuries suffered by a passenger when those injuries are caused by the action of another passenger?

ANSWER: The general rule is that a bus company is not liable for such injuries unless the driver had notice of dangerous conduct on the part of a passenger and reason to anticipate that injury might result.

In Hamilton v. City of Cleveland, 110 N.E. (2d) 50, it was shown that a Mrs. Hamilton boarded a bus.

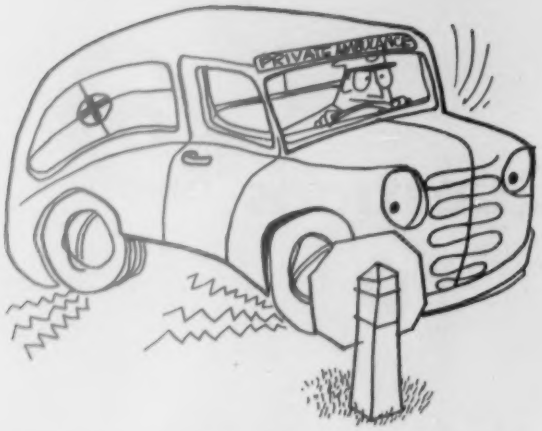
A little later another passenger entered and began to talk to the bus driver. While talking, he drew and continued to brandish a revolver, which he showed to the driver. The latter made no objection, nor did he make any attempt to disarm the passenger.

The gun discharged, and a bullet grazed Mrs. Hamilton's head, causing a brain concussion.

A jury awarded Mrs. Hamilton heavy damages, and a higher court upheld the award, commenting:

"There is nothing in the record to indicate that the operator ordered the passenger to put the pistol in his pocket, but on the contrary, the bus driver engaged in conversation with this passenger about the gun. It follows that the liability of the carrier arises not alone from the fact that the passenger has been injured, but from the failure of its agent or driver to afford proper protection."

Continued on next page



QUESTION: Is an ambulance not operated by the city entitled to the protection given by city ordinances to "police vehicles?"

ANSWER: No.

In Smith v. Black and Clark Funeral Home, 250 S.W. (2d) 256, it was shown that a city ordinance permitted police vehicles on emergency runs to pass stop signs without halting.

A funeral director had a contract with the city to handle pauper dead and to make emergency runs.

One day while his ambulance was on such an emergency run it passed through a stop sign and collided with a motor bus.

In subsequent litigation the higher court held that the funeral director had no lawful right to pass the stop sign. The ambulance was not a legal police vehicle, the court ruled, and therefore was not permitted to ignore traffic signs.

QUESTION: If a lower court increases or decreases a judgment rendered by a jury, will the higher court approve the verdict?

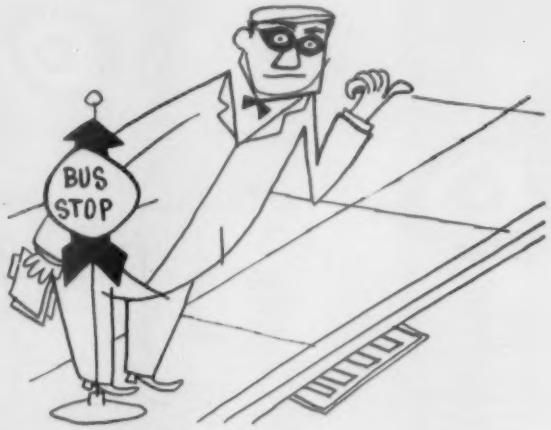
ANSWER: Generally speaking, the higher court will approve, provided the injured person agrees to the increase or decrease.

For example, in Gearhart v. Sacramento City Lines, 253 Pac. (2d) 42, a Mrs. Gearhart was injured by falling from a bus when the door of the vehicle was closed upon her foot.

A lower court jury awarded her $2,000, but she considered the verdict too low and was not willing to accept it.

Then the bus company agreed to increase the damage allowance to $3,000. The court entered a judgment for the increased amount without the consent of Mrs. Gearhart, who still was not willing to accept it, even at the higher figure.

Since Gearhart had not consented to the $1,000 increase of the damage allowance, the higher court reversed the verdict and allowed Gearhart no damages.



QUESTION: May a company which keeps records likely to be destroyed, lost or stolen violate its right to collect insurance in case of a loss?

ANSWER: Yes.

In Ever Co. v. New Amsterdam, 61 N.W. (2d) 172, it was shown that a company held a burglary insurance policy which, like most such policies, provided that the insured should keep its records in such a manner that the insurance company could accurately determine the amount of loss.

There was a robbery, and the insured sought to collect. Testimony showed that the company kept money belonging to its employees in an office safe.

To keep track of how much money each employee had in his envelope, the company made notations on the front of the envelopes, indicating exactly how much cash was in each one.

The court's ruling stated:

"Plaintiff (the company) should have anticipated that if the money was wrongfully abstracted from the safe the envelopes containing it would likewise be taken, so that no record would remain."

In the same decision the court pointed out that to comply with insurance policy requirements a company must keep records where they're not likely to be destroyed by fire or theft, so that the insurance company can verify a loss alleged by the insured.

SHORT HAULS

FOR DEPENDABLE SERVICE . . . GO BY BUS—An Ingorot mountain woman riding in a Manila bus asked the driver if he'd mind stopping for a few minutes. The driver obliged, and the woman got off and went into a hut. She returned fifteen minutes later with a healthy baby boy she had delivered herself.

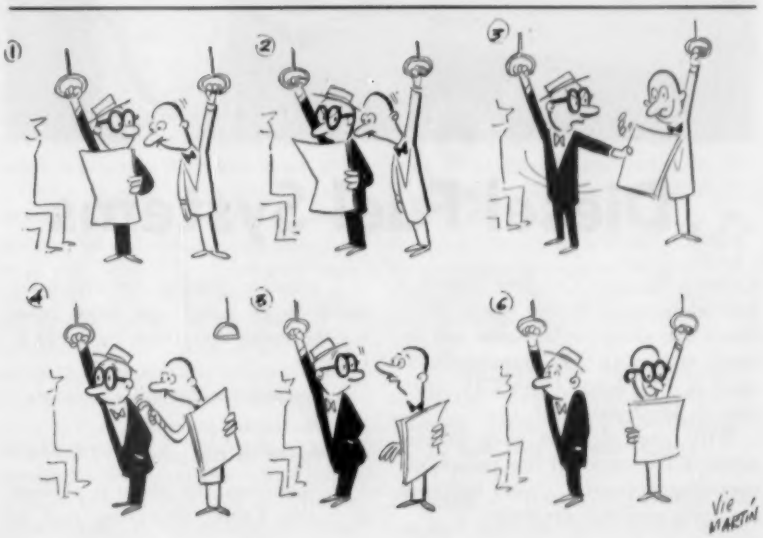
MOTHER'S LITTLE HELPER—Bus officials in Dayton, Ohio were recently swamped with complaints that the man on duty was giving out wrong information. They discovered that a man with a similar telephone number, sick and tired of requests for bus information, was cheerfully handing out his own version of the bus schedules.

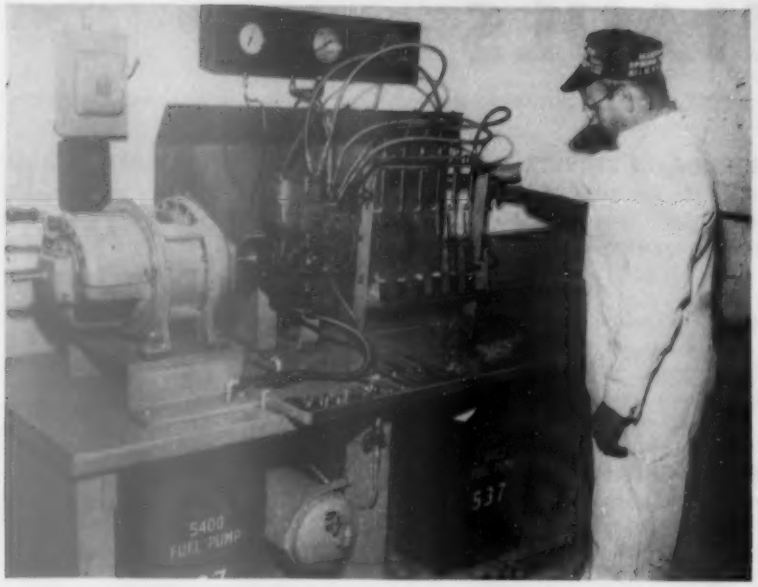
SUGAR AND CREAM—A British firm has found a new way to boost production. It discovered that girls working in its factory were skipping breakfast to get to work on time. Now the damsels are picked up each morning in factory buses and served breakfast in the best airline style.

SIR GALAHAD TO THE RESCUE—A young mother carrying a small baby had to stand up in a crowded Memphis bus until Kim Gregory rose and said, "Here lady, take my seat." There was a small stampede to offer the woman a seat. Gregory was the driver of the bus.

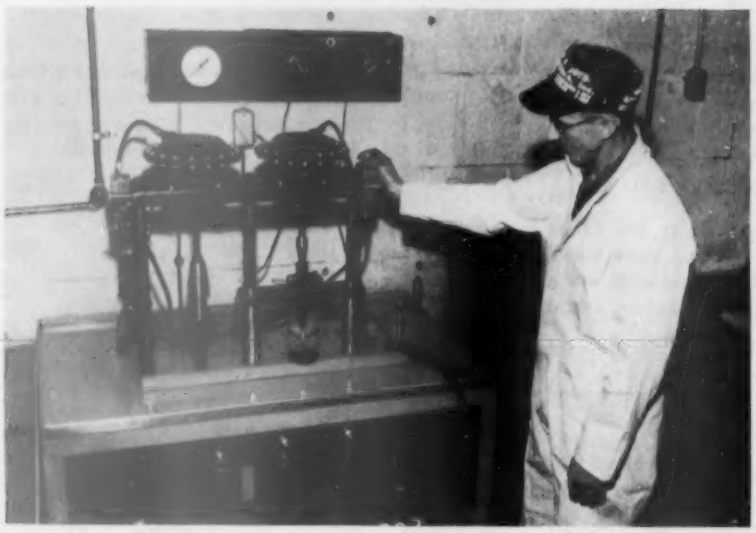
A WARNING WITH TEETH IN IT—Customs officials in France warned that anyone caught coming back to the country with different teeth than the ones he went out with would be fined heavily for importing them illegally. An organized gang was ferrying busloads of Frenchmen into Holland to get the choppers at black market prices.

EENIE MEENIE MINEY MO—The Ogden City Bus Lines, cooperating with a Salt Lake City dairy in an advertising scheme, had three buses painted to resemble the dairy's fleet of trucks. They look exactly like them. It was a good scheme except for one little thing. Passengers were letting the buses go by, mistaking them for milk trucks.





How to Shop Test . . .



. . . Diesel Fuel Systems

CAPITOL TRANSIT CO. does it with a pair of home-made test stands. They check fuel pump performance and the spray nozzles on the Cummins diesels used in 147 White buses CTC operates in Washington, D. C.

With one of these shop laboratories, CTC can tell if fuel pumps are operating normally . . . are balanced . . . give uniform pressure .

A variable speed motor drives the pump to be tested and three gages tell the tester everything he needs to know:

- Normal fuel pressure
- Maximum pressure
- Speed of the pump

In operation, the pump is allowed to rotate freely, delivering fuel to the nozzles. Unusual or fluctuating pressure can be spotted immediately on the first gage.

The second gage indicates maximum pressure. To check this the operator speeds the pump up and shuts off the main fuel supply to the nozzles. Mechanics know what it should be; the gage tells what it is.

But all this is to make sure the pump is in operating order. Now the third gage—a tachometer—is put to work.

The pump is stepped up to a specific speed and calibrated glass graduates are tilted under the nozzles. After a certain number of revolutions, the graduates are removed quickly by pulling a hand lever attached to the base. The base permits the operator to move all graduates at one time . . . guarantees an immediate by-pass of fuel.

Each glass shows how many cubic centimeters of fuel have been delivered at a specific speed and if that amount of fuel is within the limits set for correct performance at that speed. Each glass also shows if the pump is balanced—delivering equal amounts of fuel to all nozzles. Adjustments can be made on the spot.

Another test stand is used for checking nozzles. By using air diaphragms, fuel can be forced through a nozzle at operating pressure.

The right half of the stand holds the nozzle to be tested. Through it, an air-activated plunger draws fluid and forces it out—as it would in the cylinder. A small anvil holds the nozzle against the thrust of the plunger. A mechanic can tell by looking if the nozzle is producing the correct spray pattern.

The left hand of the shop-made laboratory is used for searching out leaking nozzles. A nozzle is depressed in a cavity in the base of the stand. The cavity has a brass seat to assure a good seal.

By means of an air diaphragm and a pressure multiplier, a plunger forces fuel through the nozzle while pressure is indicated on a large gage. A drop in pressure means a leak in the nozzle. If nozzles fail this test, they'll fail in service too.

To guard these precision parts against damage before and after tests, CTC built special boxes to carry injectors and nozzles around.

THE CONSULTING DEPARTMENT

This month 18 maintenance experts tell . . .

How to Add Life to Your Brakes

WE ASKED:

1. **What mileage are you currently obtaining on brake lining —on brake drums?**
2. **What is your experience with "Normalized" brake drums with Copperweld brake drums?**
3. **How can brake rollers and anchor pins be lubricated properly without getting lubricant on the brake lining?**
4. **What success have you had in reducing brake squeal by using a lining with different coefficient of friction?**
5. **What have you been able to accomplish in way of equalizing life between front and rear linings?**

AND THIS IS WHAT THE EXPERTS ANSWERED . . .

R. H. Moore, superintendent of maintenance, Conestoga Transportation Company, Lancaster, Pa., has this to say about . . .

Mileage • "Our present mileage (city and suburban) average is approximately 60,000 miles, and we obtain over 180,000 miles from our brake drums. At each reline, the drums are turned to the next oversize, and ¼" is our maximum turning.

Brake Drums • "We have not used any "Normalized" brake drums lately. Our past experience didn't show too much improvement. I understand that there could be some advantages if the brake drums are brought up to high enough temperature to change molecular construction of the iron, but no one has found a practical or sufficiently economical method to do this in productive quantities.

"In regard to Copperweld brake drums, we have just recently installed four of these drums. They have certainly improved our braking with lower co-efficient lining. We feel that they are an improvement on our standard brake drums. Only time will tell if they will pay for themselves.

Lubrication • "It is recommended that no lubricant be used on brake cam rollers and pins. They are copper-coated or Parkerized, and need no lubrication. In order for a roller to roll, it must have friction. If lubricated, it becomes flat and will not roll.

"Also, lubrication gathers dirt and eventually the roller will stop rolling due to dirt collecting on the pin. Anchor pins should be lubricated very sparingly, and not too often. We have set up 6,000 miles as our basis of lubrication anchor pins. We even remove the grease fitting and put a plug in the anchor pin after greasing.

Brake Squeal • "We reduce brake squeal by changing the brake lining with different co-efficient of friction. Brake lining is not always the cause of squeal, but we do know that if we can lower the co-efficient of friction, squeal will often disappear. It is definitely beneficial to use a combination set of linings to be sure that the brakes are balanced.

Equalization • "The life between front and rear brake lining can be equalized in most cases, by properly balancing brakes. In doing this, it is necessary to see that the front and rear brakes are applied at the same time. This means that the brake chambers and brake shoe return springs must all be checked and tested on the bus to see if the same amount of air applies the brakes. In order to accomplish this on front brakes, it may be necessary to remove the quick release valve and sometimes the air pipe sizes have to be changed."

A. E. Savage, director, mechanical department, Capital Transit Company, Washington, D. C. has this to say about . . .

Mileage • "Until about a year and one-half ago our rear brake lining

life averaged about 28,000 miles and front lining life about 80,000 miles. Since that time, we have done extensive testing in order to balance the life and brake effect between the front and rear linings, with no final mileage yet available.

"With regard to air transmission times, we have had analyses made by Bendix-Westinghouse from which we have been able to obtain substantially equal air transmission times front and rear and to hold those air transmission times to a minimum.

"Without going into detail, this has been primarily accomplished by using a relay valve on the rear brakes and eliminating the quick release valves on the front brakes together with changing the size of the air line from the brake valve to the front brakes where necessary. The air from the front brakes, of course, is released through the brake valve.

"We have also adopted a higher friction lining for the front brakes and use a low friction lining on the rear. These modifications have been made to Whites Model 788 and 798 and Macks Model CM40 and CM44. Within the past year and one-half, we have placed in service 147 51-passenger coaches which were specifically designed with brake balance in mind. On these coaches if all four wheels are relined at once, the lining life front and rear is substantially the same and is averaging out somewhat over 30,000 miles with the same friction brake lining all around.

Brake Drums • "Our brake drum life has been extended so much by using portable brake drum lathes in our garages, and removing only enough metal to clean up the drum when brakes are relined, that it appears that a substantial proportion of our brake drums will last the life of the coach. We have had no experience with Normalized brake drums or Copperweld drums.

Lubrication • "We have never been able to successfully lubricate cam rollers but the anchor pins are lubricated with a grease fitting which, with reasonable care, would not get lubricant on the brake lining.

Brake Squeal • "We have not been badly troubled by brake squeal but our tests indicate that, generally speaking, a low friction lining is more satisfactory from this standpoint."

David J. Munro, superintendent of maintenance, Montreal Transportation Commission, has this to say about . . .

Mileage • "The type of operation, the weight of the vehicle, make of linings and drums used, are among factors to be considered when brake lining mileage and brake drum mileage are concerned.

"From a recent survey we found we were averaging respectively 45,000 and 41,000 miles for front and rear brake linings, and 300,000 and 150,000 miles for front and rear drums. This survey has been made on 40 passenger C. C. & F. diesel buses equipped with American Brakeblock (80 mix) brake linings and Reyco brake drums operating in the City of Montreal.

Brake Drums • "We have had no experience with "Normalized" or Copperweld brake drums.

Lubrication • "Brake cam roller pins are greased at their installation. A flat is ground on the pin to permit a greater quantity of grease between the pin and the roller. After installation, it is not possible to grease the roller pin. For this reason we have to use grease between the roller and brake cam to prevent sticking. In this case, a small brush is used to apply the grease; it is very important that only a small amount of grease be used. Anchor pins are greased with an air grease gun but great care must be taken to prevent overgreasing.

Brake Squeal • "Some tests have been carried out on our property to reduce brake squeal by using brake linings having different coefficients of friction, but no satisfactory results were obtained.

Equalization • "In an attempt to equalize life between front and rear brake linings, we have tried to increase the breaking effect on front wheels by increasing the length of front slack adjustors. Buses were road tested on dry, wet and slippery roads, before putting them back into service, to be sure that no accident hazard had been created. Until now, the results we have obtained are very encouraging."

W. E. McMillian, maintenance department, Ohio Valley Bus Company, Huntington, W. Va., has this to say about . . .

Mileage • "We are obtaining an average of 33,000 miles on the rears and 75,000 on the front. We are getting approximately 175,000 on brake drums before turning.

Brake Drums • "We have had no experience on Normalized or Copperweld drums.

Lubrication • "Cam rollers are lubricated with a paddle or brush and/or a pump oil can. Anchor pins are lubricated at definite periods with pressure gun and then greased just to the point where the grease shows between the shoe and spider.

Brake Squeal • "We have achieved no success at all by changing brake lining, but have had excellent results with the anti-squeal plates.

Equalization • "The only experience we have had with equalizing wear on front and rear brakes is where the front quick release valve has been removed and stronger spring installed in rear brake chambers by the manufacturer. This has increased our rear lining life and decreased the front."

W. E. Williamson, superintendent of automotive equipment, St. Louis Public Service Company, has this to say about . . .

Mileage • "Mileage currently being obtained by St. Louis Public Service Co. on brake lining is 63,000 miles on the average; on brake drums, the average is 240,000 miles.

Brake Drums • "As to special drums, we have had no experience with the Copperweld brake drum but we have had a limited amount of very good experience with "Normalized" drums.

Lubrication • "Anchor pins are lubricated with precaution as to the amount of lubricant forced into the

pressure fittings in the pins. We lubricate rollers at time of installation and also at brake relining interval with No. 2 flake graphite. At every 9,000 mile inspection we use a special oil can with a longer slender tube to reach the outside roller.

Brake Squeal • "As to squeal, we have none with our present lining.

Equalization • "Concerning ability to equalize front and rear lining life, our brakes are of the Wagner hydraulic type and we have equalized front and rear brake life by installing wheel cylinders of proper size to balance front and rear braking effort."

Torrens A. Smith, superintendent of equipment, Louisville Transit Company, has this to say about . . .

Mileage • "Brake mileages vary to some extent of course with various models of buses We are, however, at this time obtaining an average in excess of 50,000 miles of brake lining life on coaches which average 40-passenger seating capacity.

Brake Drums • "Brake drum life is in excess of 200,000 miles. We have had no experience whatsoever with the so-called normalized brake drums or with Copperweld brake drums.

Lubrication • "Brake cam rollers cannot be lubricated satisfactorily. Anchor pins are lubricated at our lubrication periods, and it is a matter of proper education of the man using the lubricating gun as to how much is put in.

Brake Squeal • "We have never been bothered particularly with brake squeal. We have found, however, that the use of combination friction lining on all wheels has resulted in better overall life, better braking efficiency and quiet brakes.

Equalization • "We have equalized life between front and rear brake linings to a much better extent than we had when the buses were originally received from the manufacturer by changing to heavier rear brake chamber springs on practically all model buses. In some cases we have plugged the quick release valves. Each individual model bus is a problem of its own and no general rule can be laid down for equalizing brakes on all buses."

Can You Help Provide Answers To These Questions ? ? ?

SPARK PLUG TROUBLE—Almost overnight we've run into spark plug trouble. Our plugs now being changed at 1/3 former mileage. Are other operators running into this condition?
Do spark plugs foul badly and is there excessive motor missing? What is your present average spark plug life in miles and months and how does it compare to former years?
Are others using either experimentally or in regular service the so-called "aviation" plug known as type 808 with four electrodes. What success have you had with this plug?
At what mileage are electrodes re-gapped. What make of spark plug is standard on your property.

OUTDOOR BUS STORAGE—Can a fleet of 100 buses be stored outdoors satisfactorily where temperature drops to 10 deg. F. and lower? What type of unit is recommended—the immersion type, the stationary steam heating plant type or the auxiliary heater type unit? Approximately what is the installation cost per bus for the type heating system your company uses. What was the cost of heating per bus for this type in the winter just past? Approximately how many buses are thus safeguarded in your property, how many days was it necessary to use the heaters in past winter?

WHEN ASKING OR ANSWERING QUESTIONS—Please address your letter to the Editor, Consulting Department, BUS TRANSPORTATION, 330 West 42nd Street, New York 36, N. Y.

W. L. Briar, vice president in charge of equipment, Kansas City Public Service Company, has this to say about . . .

Mileage • "Regarding brake lining mileage, we get 74,143 miles average on front wheels, 50,080 on rear; no record is kept of brake drum miles.

Brake Drums • "We have no experience with Copperweld or Normalized drums.

Lubrication • "Our method of lubricating cam rollers and anchor pins is to grind a groove in the anchor pin and fill with lubricant at the time pin is installed. Pins are not lubricated other than this.

Brake Squeal • "Concerning brake squeal we have had very little trouble from that score and therefore no experience in changing lining to correct squeal.

Equalization • "What to do about equalizing life between front and rear linings? We also are looking for an answer to that one."

J. J. Mooney, maintenance department, Lexington Railway System, has this to say about . . .

Mileage • "We average 80,000 miles on lining and turn the drums whenever linings are renewed. A 1/32 in. cut usually is ample to clean up the drum and this only increases the diameter by 1/16 in. On rare occasions it is necessary to take a 1/16 in. cut. We weigh our pull back springs and slack adjusters in order to get an accurate balance."

Brake Drums • "We have had no experience with Copperweld or Normalized drums.

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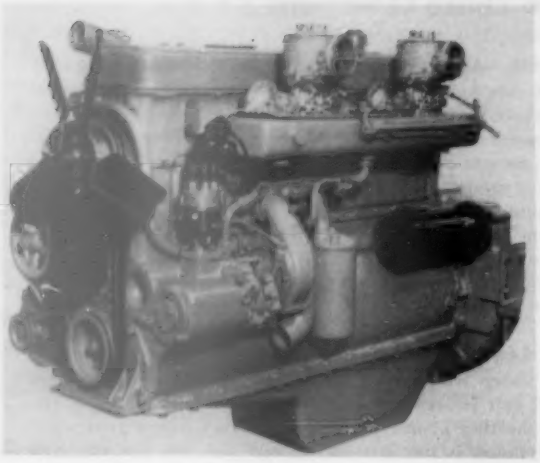
WHAT'S NEW



New 200 hp light-weight engine

. . . for use in a wide range of buses and trucks has recently been introduced. This new model 590 develops more than 200 horsepower yet weighs less than 1,300 lb, for what is said to be the lowest power-weight ratio of any heavy-duty engine.

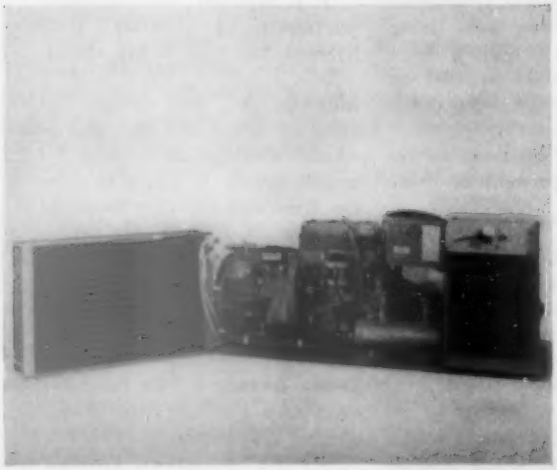
The new engine will be available for gasoline or liquid petroleum gas fuels. There is a choice of dual downdraft carburetors for maximum power output or single up-draft carburetion for maximum economy. Model 590 features a unit assembly of crankcase, cylinder block and head, which permits quick replacement of the block and pistons without removing the crankcase. Long studs in the crankcase pass completely through the cylinder block and head, holding the engine rigid but permitting rapid disassembly and replacement of single units. Additional information can be obtained by writing *Hall-Scott division of ACF-Brill Motors, Berkeley, Calif.*

Hydratork drive for fork trucks

. . . featuring a transmission which does away with the need for gear shift, high and lower gears and a clutch is now available. The Hydratork drive, which combines a torque converter with a single constant-mesh transmission is said to make it possible to operate a gas-powered fork-truck with three simple controls, an accelerator, a brake pedal and a forward-reverse selector lever located on the steering column.

According to the manufacturer, the new drive which has a capacity of from 3000 to 5000 lb will eliminate gear clashing during engagement, resulting in savings due to reduced maintenance requirements.

Other advantages of the Hydratork over other transmissions include smoother acceleration, more positive drive control at all times, and controlled "inching" ability. For further information write *Clark Equipment Company, Battle Creek, Mich.*



Diesel engine for bus air conditioning

. . . said to offer operators of diesel motor coaches advantages over gasoline-driven air conditioning units, is now in production.

Primary among these advantages is the convenience factor, since the need for a special fuel tank is eliminated entirely, and garage or service shops no longer need to supply two different types of fuel supply for diesel powered buses.

The additional weight of the diesel engine is more than offset by the elimination of a separate gasoline tank and the operating supply of gasoline, since both driving engine and air conditioning unit may be operated from a common fuel supply.

The new diesel power plant has been especially designed by *Continental Motor Corporation, Muskegon, Michigan, for Tropic-Aire, a subsidiary of McGraw Electric Company, Chicago, Ill.*

New catalytic diesel muffler . . .

. . . designed to reduce the noxious and irritating components of diesel engine exhausts has recently been developed. The new device, called the "Diesler", attaches directly to the engine exhaust manifold and burns by catalytic action carbon monoxide and hydrocarbon fumes in exhaust gases.

Prototype Dieselers have been tested on diesel engines that have been loaded to simulate the work cycles of buses and trucks. Overall dimensions are 7x12x27 in. *Oxy-Catalyst, Inc., Wayne, Pa.*

New non-jamming registering fare box . . .

. . . has been developed. Coins dropped into the box through a trap lid actuate the culling mechanism. Each coin slides into one of four niches of a flat revolving disk. As the disk revolves, good coins lying flat in their respective niches pass under a low ceiling projection into the counting mechanism and drop into the locked vault. Bad coins or slugs are flipped out and fall into a special receptacle. *Rockwell Manufacturing Company, 400 N. Lexington Ave., Pittsburgh, Pa.*

New spark plug service unit . . .

. . . combines a central location for all tools and equipment needed for correct spark plug maintenance.

The unit is made of steel with a baked-on white finish and is equipped with a concealed 36-in fluorescent fixture. The bench surface is recessed to accommodate a standard Champion service unit hind the bench is fitted with hold-and is fitted with a corrugated rubber mat. One half of the panel beers for the proper assortment of tools. *Champion Spark Plug Company, Toledo, Ohio.*

Here are some other NEW PRODUCTS that are described more fully in another part of this issue. Don't miss them . . .

- **New series of pumps**—for hydraulic power steering ..... p. 114
- **Skin cleanser**—for use in the automotive industry ..... p. 114
- **Safety film**—on the use of oxy-acetylene cutting and welding equipment ..... p. 114
- **Open end-box wrench**—featuring a new design ..... p. 114
- **Door entrance trolley bridge**—designed for trolley coach and street car operators ..... p. 115
- **Tune-up tester**—said to speed up and improve engine tune-ups ..... p. 115
- **Hand model blow torch**—with disposable fuel tank ..... p. 115
- **Leak detector**—said to detect the most minute leaks where gas or air is used ..... p. 115
- **Hydraulic hand jacks**—in capacities of from 3 to 20 tons ..... p. 116
- **Air sander**—with an operating speed up to 6,000 cycles per minute ..... p. 116
- **Engine preheaters**—designed to eliminate cold weather starting problems ..... p. 116

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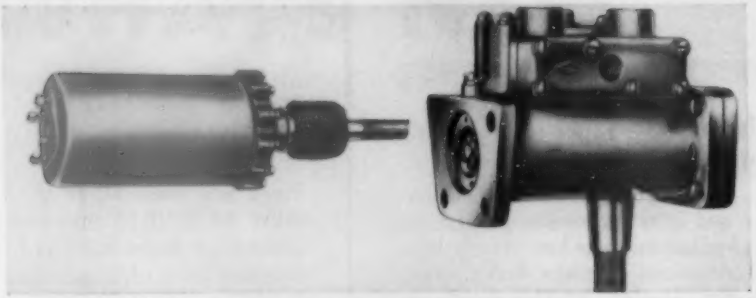
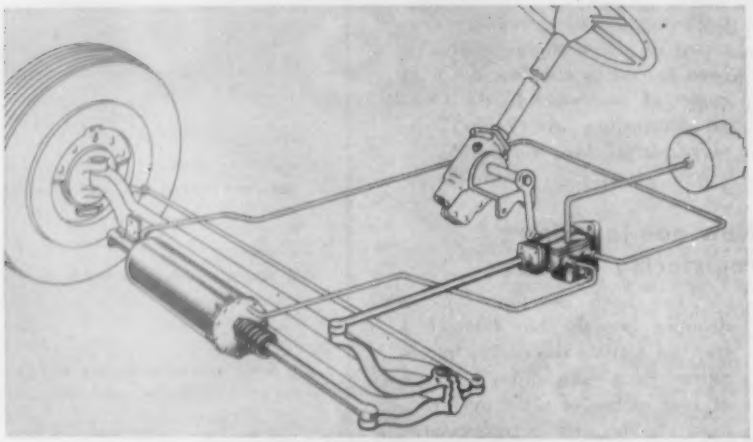


POWER CYLINDER reacts against fixed point of front axle beam or chassis frame.

CONTROL VALVE responds to force of steering gear and steering knuckle arms.



HERE'S HOW THE TWO UNITS APPEAR IN A VEHICLE'S STEERING MECHANISM.

Air Steering for Buses

. . . using compressed air supplied by an engine-driven air brake compressor as a power source is now available. According to the manufacturer, the equipment is entirely self-sufficient, as the air compressor has an unlimited replenishing source and only one medium is necessary for both braking and steering. Normal wheel feel is retained and steering wheel spinback or retrieve remains the same as with manual control.

The new system is said to provide for the addition of power and control units to existing steering mechanisms without disturbing the steering geometry or steering characteristics of the vehicle. The air-power steering equipment consists of a double-acting power cylinder activated by a control valve containing a preloaded spring.

The power cylinder reacts against a fixed point of the front axle beam or of the chassis frame. The control valve operates in response to the force developed between the steering gear Pitman arm and steering knuckle arm. The valve functions when the force exceeds the load of the preload spring and air pressure is delivered to the end of the cylinder, thereby assisting movements in the direction toward which the steering wheel is turned. When the force exerted drops to a valve below the preload, the valve returns to exhaust position.

The power cylinder is a double acting type and is available in two sizes, a 7 inch diameter x 11 inch stroke which produces 3,800 lb rod force at 100 psi air pressure, and a 5½ inch diameter x 12 inch stroke which produces 2,300 lb rod force at 100 psi.

Additional information can be obtained from *Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio.*

Continued on page 114

New Literature

The following have been selected as particularly worthy of your attention, and condensed for your convenience.

Paint selection check chart

. . . said to be a quick-answer guide to maintenance painting problems, is now available. The chart is said to enable paint contractors, building contractors and maintenance superintendents to determine which paint products have all the performance requirements — including cost — for each paint job. *Wilbur & Williams Company, 130 Lincoln Street, Boston 35, Mass.*

Welding aluminum manual

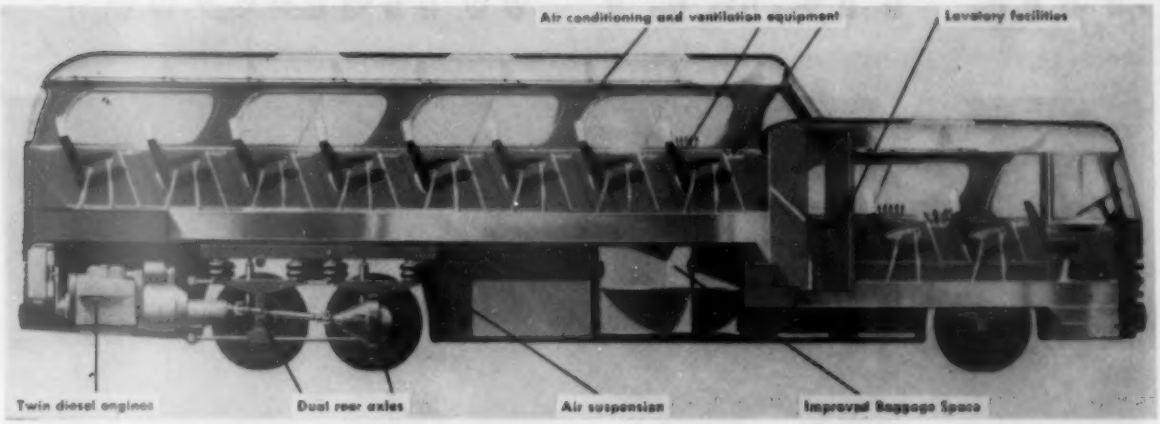
This new manual contains material on 34 processes suitable for welding, brazing, and soldering aluminum and its alloys. These processes are shown in a chart revealing their relations to one another and indicating those processes most widely used.

Detailed weldability ratings for the wrought alloys and casting alloys are presented in tables rating them for gas, arc, and resistance welding processes as well as for brazing and soldering. The factors that give the aluminum alloys their particular welding characteristics are explained. *Reynolds Metal Company, 2500 South Third Street, Louisville, Kentucky.*

Vu-O-Matic rotary stand folder

. . . describes a method of storing small service and maintenance parts. The folder is illustrated with photographs showing Vu-O-Matics in use in service bench work and also showing how these rotary stands multiply the number of parts that can be stored for immediate access in given space.

In addition, the folder gives complete data on the range of stands, capacities, dimensions, components and special combinations. *The Union Metal Manufacturing Co., Canton 5, Ohio.*



Sectional view shows the features to be found in . . .

Greyhound's New Scenicruiser

. . . which will be in service on the nation's highways before the start of the summer travel season.

The new deck-and-a-half vehicle, with 43 seats, is striking in appearance, incorporates mechanical innovations designed to produce greater operating efficiency and increased passenger comfort.

It embodies design, construction and operational features based on the operating experience of Greyhound, the manufacturing skill of General Motors and the artistic ability of Raymond Loewy Associates.

Most striking departure from conventional coach design is the two-level passenger arrangement.

Ten passengers are seated on a forward lower deck and 33 on the upper deck. This arrangement elevates the majority of passengers above the traffic level and provides excellent vision, which is enhanced by big picture windows of glare resistant glass.

These windows, each six feet in length, comprise more than 90 per cent of the side structure of the Scenicruiser above the seat levels. The window glass is tinted green, with a heavier gradation of color at top and bottom to eliminate glare of sunlight and headlights, as well as reflection from the road.

Other improvements designed for passenger comfort are new type individually controlled reclining seats, added leg room, and smartly designed washroom facilities. The latter is located at the rear of the lower deck of the bus at the midway point.

A new concept in bus air conditioning is the utilization of the structural parts of the body framing and the walls as air ducts for radiant heating in the winter and cool air flow in the hot months.

The ventilation system is capable of drawing fresh air from the outside at a rate sufficient to change the air in the bus every 40 seconds. This air is cooled and dehumidified or heated, as required, and circulated through vents at the window ledges.

Further ventilation is possible by means of a series of manually-operated ports in the window frames. An individually controlled smoke vent above each seat enables a passenger to smoke without annoying others.

Use of twin diesel engines is perhaps the most important innovation in the Greyhound Scenicruiser.

The engines, each rated at 150-horsepower, are mounted side by side at the rear of the bus. These engines drive the bus through two fluid couplings connected with a multiple-speed transmission, and also operated the generator and air compressors.

The air conditioning system has its power take-off from the right engine. In the event either engine should fail, manual operation of the fluid coupling by the driver will permit the other engine to propel the bus and run the accessories.

The twin engines are mounted as a unit so they may be removed and replaced by another dual-engine assembly in a matter of minutes.

Greater riding comfort will be possible in the new Scenicruiser as a result of a longer wheelbase and the use of tandem rear axles.

The differential is on the forward one of these two axles, for the driving power, while the rear axle rides free to more effectively absorb road shock.

Air-Suspension, which completely eliminates metal leaf springs, and which was first introduced by Greyhound on its Highway Traveler bus in 1953, is standard on the new vehicle.

All four rear wheels carry dual tires, increasing traction for greater safety, through power braking. Power steering assures easier and more positive control by the driver, as well as smoother performance of the bus.

The unique raised deck design and added length provide for greatly enlarged baggage compartments. Although all passengers ride above the level of passing traffic, the overall height of the Scenicruiser is less than a foot more than conventional buses.

THE TICKET WINDOW

BUS RIDERS NOW CAN CALL THE HOUND TERMINAL IN CHICAGO, ORDER TICKETS, AND GET FREE DELIVERY SERVICE

Free Ticket Delivery Ups Sales

"A Ticket as Near as Your Phone," could well be the motto of the new Chicago Greyhound terminal.

It fits an experimental telephone ticket sales campaign which has been in effect at the new terminal since last September.

The plan provides for the free delivery in Chicago and nearby suburbs of any intercity bus ticket totaling $15 or more, which has been ordered by phone.

The idea was originated by Greyhound Vice President Ralph Bogan, and was put into execution under the able direction of Larry Hoffman, terminal manager.

The mechanics of order taking are simple. Customer calls for trip information are received direct by the Telephone Information Service Department, the same as in the past. The difference now is that the operator has the authority to deliver a sales talk and take an order.

While giving trip information, the operator explains that Greyhound will deliver any ticket worth $15 or more to the customer's address without delivery charge. More and more, customers are finding it convenient to accept COD delivery of their ticket beforehand, rather than wait in a ticket line at the terminal just before bus departure.

The telephone offer of free ticket delivery beforehand has also been the means of closing many sales at the point when the customer was merely seeking fare and trip information.

After making a sale, the operator writes the necessary information on a simple form and sends it to the ticket section. The form also contains space showing when the ticket was issued and delivered. The forms are accumulated during the day and then, when the night crew comes on, orders are made up for delivery during slack periods.

Delivery is handled by a local delivery company at a charge of $1.75 per address. Greyhound absorbs this charge as part of the sales cost on that ticket.

Obviously, it was necessary to give the telephone operator force special training before this program could be put into effect.

At the present time, the 18-girl force has been able to handle all calls, give information, and put on a "sales pitch" in an effort to close a sale right on the phone.

However, Manager Hoffman expects that the force will have to be increased soon to meet the stepped up demands of the summer travel season.

It's still too early to assess the full value of this telephone sales campaign, according to Manager Hoffman.

This much is known: a total of 605 tickets, with a value of $16,807, was sold by phone from last September, the starting point, up through March 5 of this year. This worked out to an average of $27 per ticket, well above the $15 minimum.

During the first five days of March, phone sales totaled $1,295 for 36 tickets, an average sale of approximately $36 per ticket.

The one seemingly weak spot in the plan is the $1.75 delivery charge, which Greyhound absorbs.

On the basis of a $15 minimum sale, and that cost of sale should not exceed ten per cent above regular terminal cost, this delivery charge is high. But the pictures come into balance when it is considered that the average ticket sale has been close to $27. On that basis sales cost is about 5½ per cent per ticket delivery.

DIRECT MAIL, with emphasis on photo postcards, plays an important part in UTC's charter promotion. Latest card has photo of the new luxury club coach shown above.

UTC Promotes Charters With Photo Post Cards

Direct mail merchandising is an important part of United Transit Company's promotion program in Providence, R. I., and the surrounding metropolitan area.

Latest in UTC's direct mail techniques is the use of the photographic postcard to promote special charter sales in the Providence area.

They use two different photographic postcards. One shows an interior view of their deluxe club charter coach (illustrated left). The other carries a picture of their open-air coach. The story on the deluxe charter coach, most recent addition to the fleet, was published in the November, 1953, issue of BT, page 63.

UTC reports that their charter revenues were up 30 per cent in 1953 over 1952. For the first two months of this year they are up 65 per cent over the same period for last year.

United Transit carried 1,500 tourists during 1953, representing a considerable increase in its tour program over 1952.

A typical example of one phase of its recent charter work is the 16,000 children transported to a series of musical concerts, a type of charter UTC is concentrating on today.

In another phase of its current merchandising program, UTC pulled a neat "conversion" stunt. The company found that it had idle carcard space in its vehicles.

This idle space was swapped for an equivalent of $3,800 in free radio time on a local station. This added up to thirteen free spots per week. These radio spots were utilized for whatever subject was timely from week to week.

Going one step further, UTC then parlayed the free radio time for daily prizes through local merchants to their "Park 'N Ride" patrons. Thus the transit company was able to get radio time and sponsor merchandise prizes every day for a year without spending a nickel of its own funds.

THE ENTIRE PTC FLEET WAS CARRYING THIS NEW CARCARD SHORTLY AFTER PASSAGE OF THE EXCISE TAX LEGISLATION

PTC Promotes "Shop Now" Riding

No time was wasted by Philadelphia Transportation Company in taking advantage of the recent reduction in excise taxes as a merchandising gimmick to promote more riding on its lines.

The presidential signature was hardly dry on the new legislation reducing excise taxes before PTC had the copies of the above carcard on display on its 2,300 buses and streetcars.

The card is attached to vehicle windows facing the street.

The display of this card is only one of PTC's merchandising tools in its current ride promotion program.

"How to increase riding on the PTC system" and "How to improve service to passengers" are among six categories of most-wanted suggestions in PTC's newly-enlarged Employee Suggestion Card System.

Employees submitting the best adopted suggestions in each of the six categories during the year will receive $50 bonuses in addition to the original awards, which may be as high as $500.

In addition to the bonus, the winning "Suggestion of the Year" will receive a duplicate of the original cash award, and the winner will be presented with the President's Pin at an annual dinner to be given by President Charles E. Ebert for employees making outstanding suggestions.

Other categories eligible for special bonus awards are suggestions on increasing the safety of passengers and employees; improving tools, machinery and shop methods; improving engineering, construction and operating methods; and reducing costs and eliminating waste.

New Sleep-Over Service Started

"Sleep-over" service is the latest lure of the intercity bus industry to capture new riders.

This new development in bus travel was introduced by Greyhound on April 1 on the Overland Route between Chicago and San Francisco, and St. Louis and San Francisco.

Most important feature of this new service is that it provides travel in air-conditioned buses by day and sleeping stops at good hotels each night. The purchase of a single ticket automatically reserves single or double rooms, as desired.

A passenger does not have to make hotel reservations in advance. He can start his "sleep-over" trip immediately after buying his ticket, assured that hotel rooms will be ready for him.

The new service is offered to bus riders in package form. Sleep-over points on the Chicago-San Francisco trip are Omaha, Cheyenne, Salt Lake City and Reno. On the St. Louis-San Francisco run, the points are the same except that Salina, Kansas, is substituted for Omaha.

The total one-way charge, including bus fare and all four hotel accommodations between Chicago and San Francisco is $69.40 for single rooms and $62.90 per person for double rooms.

Between St. Louis and San Francisco the total costs are $64.99 single and $59.04 per person double.

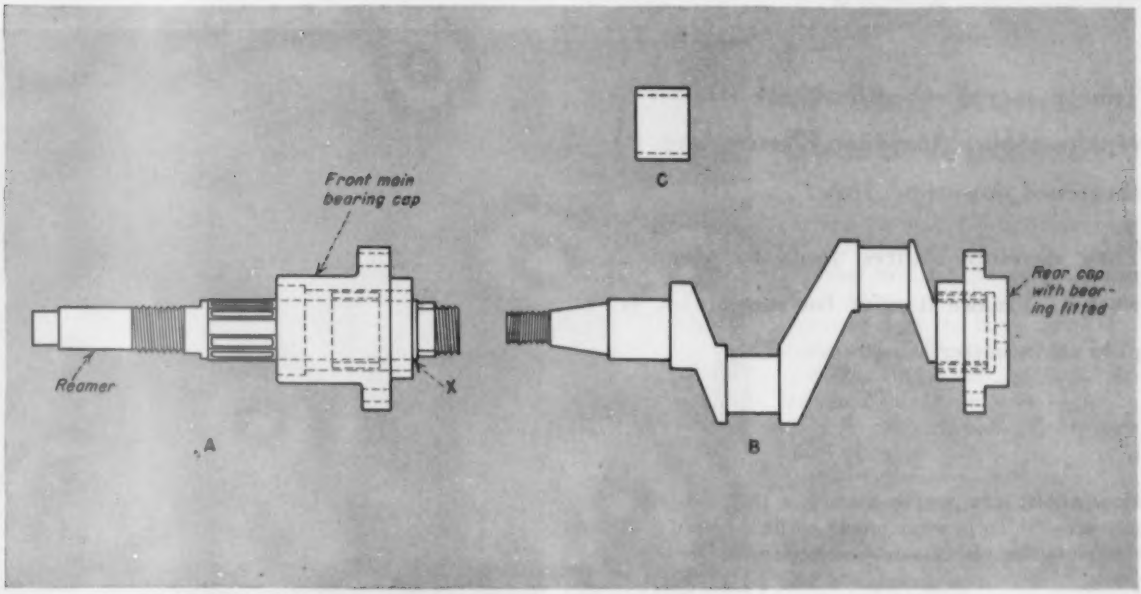
Daily service is provided both ways on the sleep-over trip. The westbound schedule leaves Chicago at 7 a.m., arriving in San Francisco at 1:55 p.m. the fifth day. The daily departure of the sleep-over service from St. Louis is at 7:45 a.m., with arrival on the 1:55 p.m. schedule.

A similar time schedule is offered on the eastbound trips. Passengers from any points between Chicago or St. Louis and San Francisco may join the sleep-over service en route.

The sleep-over service spares the traveler not only of the necessity of making individual hotel reservations, but he is assured of hotel accommodations at minimum rates.

It is anticipated that Greyhound will extend this new type of service to many other of its major long haul runs throughout the west.

HOWJADOITS



Installing Cap Bearings . . .

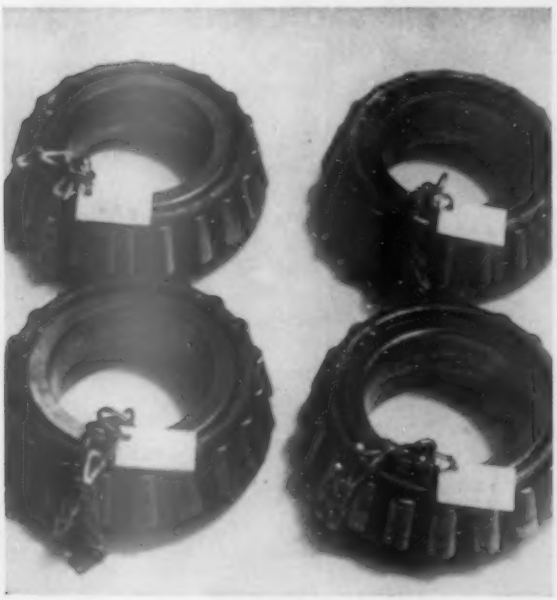
. . . on the rear main journal of air compressors is easy with a method used at Short Way Lines, Toledo, Ohio.

Mechanics there press the rear main bearing into the front main bearing cap and fit it by reaming. (A)

If bearing cap has a sharp edge at point (X) in the sketch, it should be beveled slightly to prevent shaving the outside metal which would otherwise change the outside diameter.

The air compressor crankshaft with the cap and bearing fitted is shown in (B), while (C) shows the main bearing shell.

Contributed by Thomas L. Mino of Short Way Lines.



Chain, Tags Keep Wheel Bearings . . .

. . . straight when it's necessary to re-pack wheel bearings at Capital Transit in Washington, D. C.

Mechanics tag cup and cone sets with small aluminum plates attached to short lengths of chain. Each chain has a snap hook at one end and a ring at the other. The chain is simply run through the set and snapped in place.

Aluminum tags are stamped for identification. For example, letters on the tags signify "right rear inner," "left rear outer," etc.

Formerly, when wheel bearings were re-packed cups and cones were removed, cleaned, packed and re-installed on the same coach from which they'd been removed.

Under the new system, cups and cones are kept in sets . . . are easily identified for installation at any time on other buses.

Suggested by H. Feldman.

Continued on next page

These Three Tools Save Time

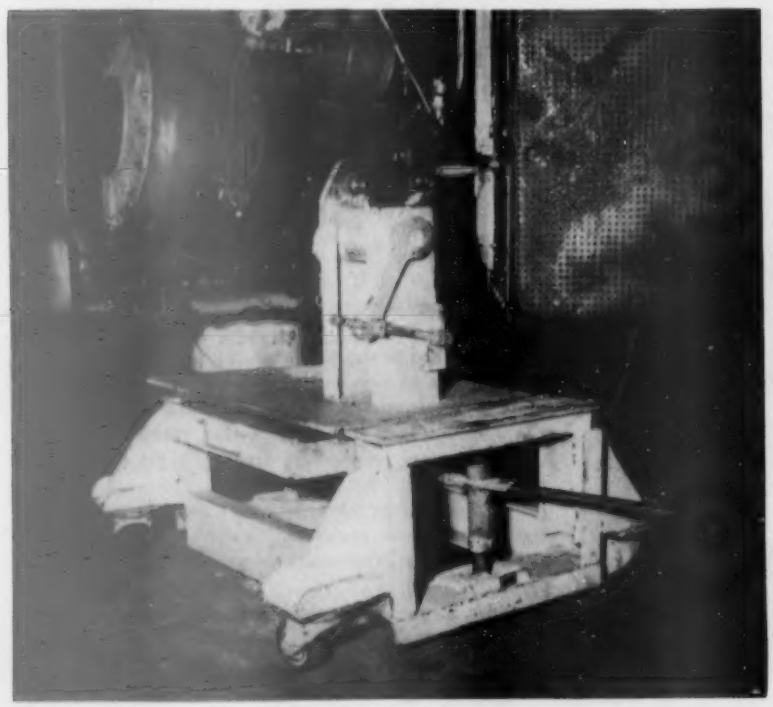
Time is money when buses are laid up for repairs. South Carolina Electric and Gas shortened downtime. How? . . .

They developed three tools to speed up work . . . make it safer for mechanics. It's paid off in better jobs, too.

Howjadoits are worth money • Bus maintenance men are cashing in every month on their ideas for cutting costs, increasing safety or prolonging the life of parts.

All it takes is a brief description and a rough sketch or photograph to earn from $5 to $15.

Send in your ideas now and cash in. Address them to Howjadoit Dept., Bus Transportation, 330 W. 42nd St., New York 36, N. Y.



2.
Auto Jack Powers Adjustable Dolly...

. . . for easing the job of removing rear-mounted GM transmissions. The bed of the dolly is fashioned from four-inch channel iron and is raised or lowered by ordinary screw-jacks.

The swivel top of the jack is welded to the top bed plate, while the base of the jack is welded to the frame of the stand.

The whole unit is mounted on rubber-tired casters so it can be moved easily around the shop.

When positioning the dolly for removal or installation of a transmission, the jacks at either end can be operated independently to raise or lower the unit.

South Carolina Electric finds the dolly not only saves time, but eliminates the need for physical lifting and straining.

and Cut Down Risk of Injury

1. Welded Stands Guard Workers . . .

. . . when it's necessary to remove bus springs at South Carolina Electric and Gas Co.

Rather than rely on hydraulic lifts alone, they built a pair of husky stands to carry the bus weight.

The 63-inch high stands were fabricated from 22-inch lengths of six-inch steel tubing which is welded to a 12 by 16-inch base of half-inch boiler plate.

This fabrication is mounted in turn on four sturdy 41-inch legs of four-inch angle iron. The entire structure is welded to a 30 by 22½-inch boiler plate base.

Six-inch pipes at the top of the stands are fitted with a eight-inch caps of steel tubing. The caps are slotted to fit the cross-members on different types of buses.

3. Converted Hoist Lifts Assembly . . .

. . . when mechanics remove or replace transmission and converter units on the Southern Coach buses used by South Carolina Electric.

The through-the-floor lift was built around a discarded Air Force cable hoist. It's mounted on a frame and fitted with rollers made from discarded ball bearings.

The entire unit fits onto a floor frame made of angle iron, which serves as a track on which the hoist assembly rides.

A chain wrapped around the assembly and attached to the hoist provides support while the hold bolts are removed. It's then an easy matter to lower the unit to the dolly.

Mechanics at the Charleston shop of South Carolina Electric find it works easier than hydraulic hoists.

INDUSTRY IN REVIEW

Riding's Down—But Revenues Inch Upward

- Here's how some of the nation's big operators fared financially last year according to year-end reports now crossing the BT news desk.

The bus industry continued to be plagued by higher costs and fewer passengers during 1953.

But annual financial reports for last year, now being released, indicate that revenues were higher than in 1952. Intercity revenues inched up about two per cent; transit went up five per cent.

Unfortunately, increased intercity revenues were offset by higher costs, so that when all returns are in the net operating revenue column will show about the same figure as in the previous year.

Transit carriers, as a whole, were able to reflect a greater portion of the increased revenues in their net revenues because of higher fares and operating economies.

Below are some of the significant financial facts gleaned from a number of intercity and transit company reports for last year.

Intercity

Greyhound carriers, representing about 50 per cent of the revenues of the long haul intercity industry, hit an all-time revenue high in 1953 with a total of $244,928,505 in the till, up seven per cent from 1952.

Consolidated net income of the Greyhound Corporation was $13,801,400, the equivalent of $1.27 per share as against $1.26 the previous year.

President Orville Caesar reported that Greyhound's major growth in the future will "result largely from the rapidly expanding population and improvements in equipment and facilities, rather than from the acquisition of additional bus routes."

Greyhound's charter revenues for 1953 jumped 34 per cent over '52, tour sales increased 26 per cent and package express revenues stepped up about 25 per cent.

Transit

National City Lines • A ten per cent drop in passengers was recorded by NTC during 1953, but because of fare hikes on its properties, NTC revenue was only off two per cent.

Operating revenue was $30,351,167, a drop of $557,373. Net operating revenue decreased only $317,230.

Favorable non-operating income and expense factors resulted in a net before taxes of $5,024,111 as against $4,377,291 last year. Left after income taxes was $3,319,611 or $2.35 a share, contrasted with $2,602,691 and $1.86 in 1952.

Cleveland Transit • Operating revenues for 1953 were approximately $29,900,000. A net of $528,646 was reported. Sale of unneeded trolley equipment brought Cleveland about $6,700.

Capital Transit • Passenger losses of about ten per cent and a nine-month delay on a fare adjustment resulted in an operating revenue for CTC of Washington, D. C., of $28,441,638 and a net of $960,258 for 1953. This, in contrast with $29,139,745 and $1,059,322 for 1952.

St. Louis Public Service • To combat decreased riding, PS went all-out in service improvements and ride promotion during 1953. Operating revenues during that year were $27,225,665—resulting in a net earnings of $1,677,182. This is a slightly higher net than in 1952 when the company earned $1,360,877 on operating revenue of $27,320,821.

New York City Omnibus • A twenty-nine day strike cost Omnibus a large portion of its net revenue last year. It dropped from $5,701, 388 in 1952 to $3,898,910.

Metropolitan Transit Authority • A loss of $8,350,676 was reported by Boston's MTA for 1953. But a fare increase, transfer of debt and rental charges and economies may eliminate the deficit this year. Partly responsible for 1953's loss was a three per cent drop in passengers.

Philadelphia Transportation • After interest payments on outstanding three and six per cent bonds, there was no net income. Operating revenues were $73,284,553 for the year.

Pittsburgh Railways • Revenue was off almost seven per cent and riding dropped off more than six as Pittsburgh Railways took in $25,964,742 last year to net $163,129. Automobiles and television were blamed for the decline.

Twin City Rapid Transit • Despite a loss of 11 million riders, TCRT upped its net revenue from $280,086 in 1952 to $355,615 last year. Operating revenue of $10,704,667 was reported for 1953.

Portland (Ore.) Transit • Operating revenue slipped to $7,212,375 and net income to $232,203 in 1953. Comparable figures in 1952 were $7,462,055 and $298,069. Included in the net was a $48,585 tax refund.

John E. McCarthy

Omnibus Corp. Lines Are Placed on Sale

Omnibus Corp. of Chicago, which two years ago sold Chicago Motor Coach Co. to that city's Transit Authority for $16,500,000, has placed its two remaining transit properties on the block.

Negotiations are now in progress for the sale of Fifth Avenue Coach Co. and New York City Omnibus, possibly to a group representing the management of the two subsidiaries. Heading this group is John E. McCarthy, president of Fifth Avenue and New York Omnibus.

For sale are 28 routes which carry approximately one million people daily mostly in the borough of Manhattan. The major portion of bus service there is provided by the two lines.

Fifth Avenue is almost wholly owned by Omnibus Corp., which also controls New York Omnibus with the largest single bloc of its stock, 34 per cent. Omnibus Corp. owns seven per cent outright . . . controls another 27 per cent owned in New York Omnibus by Fifth Avenue.

Omnibus Corp. last year purchased the Hertz Drive-Ur-Self automobile and truck rental service from General Motors . . . wants to use its money to expand in that field. Omnibus believes it could put its capital to work at a higher profit in the rental service.

Metropolitan Transit Authority Gets DPU Okay on Fare Increase

Patrons of Boston's transit facilities will pay higher fares from now on. After much wrangling, the Department of Public Utilities has approved an increase it believes will get the Metropolitan Transit Authority out of the red.

In a nutshell the new rates call for three-cent increases over present fares; children will continue to pay five cents. Approved are:

- Thirteen-cent fare for local rides.
- Twenty-cent cash fare for "system" rides with transfer privileges.
- Eighteen-cent token fare on a system-wide basis.

Under the new fare system, it is hoped that MTA will meet the cost of operation as required by law. MTA had several requests for boosts turned down when the DPU decided such increases couldn't meet those costs.

Paving the way for this latest increase, was a new law transferring fixed charges for debt retirement and subway rentals to the communities served by MTA. These charges amounted to almost six million dollars last year . . . made up the bulk of past MTA deficits.

Frank W. Rourke, chairman of MTA trustees, said that immediately after word of approval was received from the DPU, instructions were sent to various parts of the system as to the methods of collecting the new fares.

No changes will have to be made in fare boxes, Rourke said, as all cash-fare boxes will take pennies.

San Francisco Consultant Advises Subsidized System for Portland

A metropolitan area mass transportation authority, probably founded on the principle of deficit operation with taxpayer subsidy, has been proposed for Portland, Oregon, by Marmion D. Mills, transit consultant of the San Francisco Municipal Railway.

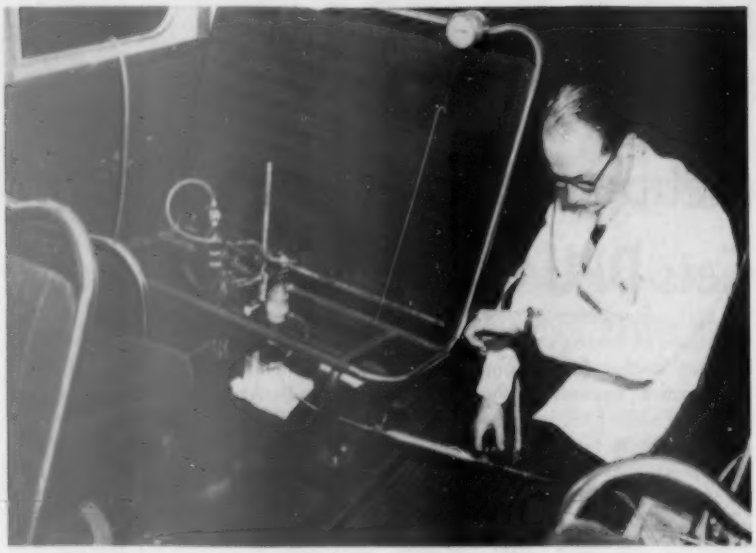
Mill's plan, calling for a non-political transit authority with power far beyond Portland's present regulatory borders, was submitted to a subcommittee of the city mass transportation franchise committee named by Mayor Fred L. Peterson.

The franchise of the Portland Traction Co. expires Jan. 31, 1956 and the committee is charged with providing city council with recommendations for renewal of the private system's franchise or alternate methods of supplying the city with transportation.

"If you're going to improve mass transit you're going to have to face the fact that someone is going to have to pay for it beyond the passenger," Mills stated in an appraisal that hinted it is more desirable to operate on a deficit than to increase fares and subsequently lose riders and watch downtown property values depreciate.

Mills said the transit question is closely involved with auto traffic and downtown parking and added: "You're going to have to have a method that will control all movement."

He foresaw city authorities with czar-like power over all forms of transportation, possibly so far as forbidding some streets to automobile traffic to increase movement.



SMITH-EMERY CHEMIST ANALYZES MANIFOLD SAMPLES. HIS CAREFUL . . .

Exhaust Check Gives Diesels Clean Bill of Health in LA

. . . where Metropolitan Coach Lines has been meeting stiff opposition in its attempts to switch from rails to rubber. Laboratory tests on exhausts from a standard GMC diesel showed that the units contributed little to Los Angeles' smog.

Metro retained two independent scientific organizations to make the tests, hoping the results would support the company's argument that a shift from rails to buses will not thicken the atmosphere.

Smith-Emery Co., Los Angeles chemists-engineers, took the exhaust samples, which were analyzed by CEC Instruments, Inc., subsidiary of Consolidated Engineering Corp., Pasadena, Calif., manufacturer of scientific instruments.

Exhaust samples were taken from a 48-passenger unit with approximately 120,000 mi. on it, 21,027 travelled since the last top overhaul. The coach was given a standard tune-up, and that was all.

The fuel used was Standard Oil of California's improved diesel automotive fuel, developed partly at Metro's urging, and adopted by Metro in late January. The new diesel has an end boiling point of 544 deg F, instead of the 584 deg end point of the previously used fuel.

Sixteen samples were taken (via a copper line tapped into the exhaust manifold) under four different operating conditions—constant speed, idle, acceleration, and deceleration. They were analyzed with Consolidated Engineer's mass spectrometer.

On unsaturated hydrocarbons, which are believed to be one of the prime causes for smog's eye irritation and crop damage, the analysis showed 0.0 for all samples. This was also true for carbon monoxide. Aldehydes, which are not considered noxious (in quantities found in exhaust) but are the principal cause of diesel exhaust smell, were found to be present in some of the samples, but in no cases more than 0.2% by volume.

Metro submitted the results of the tests to the Los Angeles Board of Public Utilities and Transportation, now considering Metro requests for authority to convert two lines.

Metro President Jesse L. Haugh told the board that the tests give assurance that GMC diesels surpass the standards recommended by the California Governor's Special Committee on Air Pollution.

No Tax Break Now For NY Bus Lines

. . . because Governor Thomas Dewey failed to release the report of his Special Transit Study Committee in time for it to influence voting on pending bills.

The two major measures called for elimination of the two per cent state gross receipts tax and reduction of diesel fuel levies. They died in the legislature when it failed to act without the report.

A spokesman for Dewey told the New York State Motorbus Association the report had raised related questions. He didn't mention what these questions were . . . said he would talk them over with committee chairman Glen Bedenkapp in an effort to work out some solutions.

Bus operators have one chance to get relief this year. The bills could be passed in a special session. Since Dewey wants his compulsory insurance bill passed, one seems likely. But whether or not the bus measures are put on the agenda is another story.

The Association will attempt to get legislators to include the bills if such a session is called. Association boys are bitter about the whole thing, since the idea of the study was to gather information to be used this year.

. . . Or for Riders Who Cross Border

. . . to avoid the ten per cent passenger travel tax.

In the past, a passenger would go to tax-free Canada or Mexico . . . buy his ticket there to escape payment. Such a trip outside the U. S. was tax free if riders showed proof of connecting transportation—a ticket from an outside point to his U. S. starting place.

But from now on passengers will have to prove Canadian citizenship or establish that the trip is really to or from an outside point . . . not from two points in the U. S.

Those who fail to offer proof and who still refuse to pay will have their names forwarded to the U. S. carrier who'll notify the Director of Internal Revenue.

Industry Briefs

Wages Decrease • Salaries and wages dipped slightly last month for 3,800 employees of the Cleveland Transit System when the Bureau of Labor Statistics announced a decline in the cost of living index. Cuts averaged about $1.50 a month in keeping with a CTS-union agreement negotiated in 1952 which includes both "up" and "down" escalator provisions.

Price Tag • San Francisco's Key System has set a $10,000,000 sale price on its properties. It wanted tax relief . . . couldn't get it. So it has suggested that either the cities it serves or Oakland merchants and Key employees float a bond issue . . . buy Key out. Cancelled franchise taxes would have saved Key about $188,000 yearly, the company figures.

Canada Acts • The Canadian government has reduced from 15 to ten per cent the excise taxes on rubber tires and tubes for all types of motor vehicles.

New Business • Capital Trailways has Alabama PSC approval for carrying light express intrastate in vehicles other than buses. It means express may become a lucrative sideline . . . no longer would depend on space left in buses after riders had stowed their luggage.

Stabilization • Transcontinental Bus System's revenues during 1954 are expected to stabilize at present levels. That's the opinion of midwestern and southern financial leaders on Transcontinental's board. The cost-revenue differential is healthier now than it has been in the past few years . . . is the basis of "quiet optimism" on the part of Transcontinental officials.

Conversion • Australia's largest city, Sydney, is in the market for $60 million worth of buses. It's converting from tram and double deckers to a streamlined single-decker system. Experts figure at least 2,500 new vehicles will be needed over the next few years.

Auction • The Internal Revenue Service has collected $5,699 of the $14,048 owed it in back taxes by the former Galesburg, Ill., Safety Route. Government officials padlocked the garages, impounding 16 buses, when the company couldn't pay . . . auctioned the entire property. Another firm is serving the area on a temporary basis.

Nashville Asks for and Gets Fare Boost Until it Quits

. . . so it can at least show a profit on its books at the end of the year.

Less than a year old, Nashville Transit Co. faced a big deficit until the city's Transit Authority came through with an "emergency" increase from 12 and 17 cents for city and suburban travel to 15 and 20 cents.

The order limits to $10,000 the profit NTC can make in any month . . . calls for token sales at two for a quarter and a trial off-peak bargain fare.

In asking for the increase, NTC told the authority it wants to quit as soon as it is sure citizens will get good service. It made its point.

Included in the order is the stipulation that should the people decide to take over NTC would sell any or all of its equipment.

New York Operators Ask City To Sell Back Some Bus Lines

. . . it took over in the days of the five-cent fare when money troubles forced private owners to abandon franchises. Fifth Avenue Coach and six other firms have bid for 29 lines . . . think they can make a go of them even though they've accounted for half past city deficits.

No cash would change hands. The private firms would pay up to 10 per cent in gross receipts taxes . . . plus other levies . . . money the city doesn't get now.

The lines operate in three boroughs . . . carry 340,000 riders . . . employ 1,200 men. And it's these men who may throw a monkey wrench in the deal. A similar transaction with New York Omnibus fell through when a dispute arose over employee and benefit transfers.

Mayor Wagner and TA's Sidney Bingham are studying the bids . . . expect to answer soon.

Public Service Asks Riders To Help Keep Its Fares Low

. . . by backing a three-pronged plan which calls for increased student fares, municipal and PUC aid in eliminating waste service, and strict control of parking.

In an all-out "take-one" campaign, PS says only a fare increase would help if the three-way plan fails.

Chief among PS gripes: It gets a student fare of only two and a half cents—half a cent less than trolleys in the early 1900's with a nickel fare. PS wants school tickets sold at 60 per cent of regular fares—10 cents for the first zone and five cents after that.

Waste service is also costing the company money. Cutbacks would not only save this money, but would affect few riders, PS contends. This, plus municipal aid in combatting parking problems . . . would cut costs enough to make a fare hike unnecessary.

NEW DISPENSER WORKS WITH TURNSTILE TO ISSUE TRANSFERS. IT MEANS . . .

Record Speed for Passengers . . .

. . . seeking transfers may be in the making if the experimental transfer issuing machine installed at a Chicago Transit Authority subway station works out.

The dispenser, first of its kind to be tested on a transit property in the United States, operates in conjunction with the turnstile. It prints and issues a transfer when a passenger entering the turnstile pushes the arm after depositing two dimes or a CTA rapid transit token.

The moving arm activates a mechanism which partially ejects a transfer from the coupled machine. If the passenger fails to take the transfer, it remains there until another rider does. When that's the case, the action of the arm produces the succeeding transfer for the next passenger.

The machine can turn out up to 5,000 individual transfers before the roll of paper needs to be replaced.

The transfers the new dispenser delivers are of the same size and bear the same information as regular blue CTA subway ducats.

Speed Recorders for Buses

. . . will be required on all intercity vehicles traveling more than 25 miles in New York State now that Governor Thomas Dewey has signed into law a bill compelling their use.

An effort to curb speeding bus drivers, the new law authorizes the Public Service Commission to draft regulations calling for recorders.

It has been estimated by bus operators that installation costs could range from $200 to $600 per vehicle.

Despite arguments by the Intercity Bus Traffic Association of New York State (See April BT, p. 53), Benjamin Feinberg, PSC chairman, stated the mechanical governors aren't enough; they can be altered to easily. Many buses operating in New York are already equipped with governors.

Two affected operators, National Trailways and Greyhound, have pledged the PSC their co-operation in its hearings on the new law. According to a Trailways official, that system's buses are already equipped with speed recorders. A Greyhound spokesman said his company has been testing such devices but hasn't adopted any as yet.

Calendar of Events

A list of activities of interest to the bus industry

May

18-20 ATA Regional & Divisional Meetings
Hotel Leamington,
Minneapolis, Minn.

24-26 Automotive Engine Rebuilders Association,
Statler Hotel,
Buffalo, New York.

24-26 ATA Regional & Divisional Meetings
Washington Hotel,
Seattle, Wash.

June

3-5 Midwest Transit Association
Hotel Lassen,
Wichita, Kans.

7 Middle Atlantic Eqpt. Men
Dupont Hotel,
Wilmington, Del.

17-19 Michigan Motor Bus Assn.
Park Place Hotel
Traverse City, Mich.

20-22 Pennsylvania Bus Assn.
Bedford Springs Hotel
Bedford, Pa.

24 New England Transit Club
Annual Outing
York Harbor, Maine

July

9-10 N. Y. State Motorbus Assn.
Whiteface Inn
Lake Placid, N. Y.

September

14-16 National Association of Motor Bus Operators
Drake Hotel, Chicago, Ill.

23-25 Automotive Parts Rebuilders Convention
Morrison Hotel,
Chicago, Ill.

27-30 American Transit Assn.
William Penn Hotel,
Pittsburgh, Pa.

November

8-10 Canadian Good Roads' Assn.
Royal York Hotel,
Toronto, Can.

Major General L. C. Jaynes, USA, Ret.

Gen. Jaynes Named Trailways President

The National Trailways Bus System has announced the appointment of a well-known national and military figure, Major General Lawrence C. Jaynes, USA, Ret., as the system's new president.

At the same time, announcement was made by Fred C. Mills, chairman of the board and president of Modern Trailways, that the system's headquarters had been moved from Chicago to Washington, D. C.

General Jaynes, who climaxed more than 35 years of service to the nation as Commanding General of U. S. Army Forces in the Mediterranean Theatre during World War II, retired several months ago.

The shift of its offices was decided by Trailways board since the nation's capital has become the center of regulatory and legislative policies which affect transportation.

In the same vein, General Jaynes, although lacking specific experience in the field of intercity bus operation, is widely known in official circles in Washington and has proved ability as a top administrator. Included in his duties will be the function of representing the Trailways System before various government bodies.

Trailways Washington office will be located in the Continental Building, 1012 14th Street, N. W. and will include the offices of F. H. McIntosh, general traffic manager of Trailways.

New England Bus Men Seek Ways To Improve Operating Conditions

Intense interest in seeking to improve conditions handicapping operations was manifested at the recent meeting of the New England Bus Association in Boston under the chairmanship of L. D. Whitney, re-elected president at sessions attended by about 90 persons.

Need for wider consideration of expanding baggage and mail carriage activities, simplifying and unifying rates for this work, interline insurance study of responsibility for damage and encouraging developments in governmental relations gave weight to the program.

Harold R. Hosea of NAMBO told the Association of recent progress in co-operation with trade associations through combining presentations before legislative committees and other government groups instead of repeating to a wearisome degree cumulative testimony and arguments on matters at issue shared by bus interests and business organizations. The united front thus presented by the business community is more effective.

Hosea further stated that as the result of many federal departmental holdovers' attitudes and objectives being largely unchanged from those of the Truman regime, despite the changes in upper official brackets, NAMBO is constantly "putting out fires" before anyone gets burned economically by costly laws and regulations. Bus companies should advise their associations of individual problems in any federal field, so that adverse activities may be prevented, both in transportation operations and in industry as a whole.

He forecast no amendments importantly unfavorable to management in the Taft-Hartley law at this Congress.

C. H. Bowen, assistant superintendent, Boston postal district, expressed the desire of mail authorities to become better acquainted with bus facilities over highways and said that postal officials welcome conferences on utilizing routes, costs and services.

100 Merchants Join Bus Company In an "Every-day" Shopper Plan

What is probably the first everyday fare refund plan to be put into use is being given a try at Trenton, New Jersey, where 100 merchants have joined in an effort to get more shoppers downtown by bus.

Patrons of any one of the 100 participating stores who purchase more than two dollars worth of merchandise are refunded their 15-cent fare.

The plan is in effect every day except Sundays and holidays starting at 9:30 in the morning. Patrons need only request a ticket upon paying the fare. In the past such plans have been used only one day a week.

The date of the trip downtown is indicated on the ticket by a punch mark. Tickets are only good on the day of issuance.

Trenton Transit's general manager, T. E. Peacock, said that stores have been refunding parking fees to shoppers . . . that this is an outgrowth designed as a convenience for those who don't have automobiles or who don't wish to drive in congestion.

While merchants bear the cost of refunds, the bus company has started an advertising and promotion plan to tell the public about the new plan. Large ads listing participating merchants have been run and a take-one campaign has been inaugurated.

Stores taking part in the idea are displaying distinctive emblems tagging them as part of the "Trenton Central Shopping District."

Results of the plan—the number of refunds made to shoppers each month —will be reported to the bus company by the merchants taking part.

Camera Review of the Month's News

Lavish offices-on-wheels

The bus is in the broker business. It was pushed . . . or driven . . . there by the big New York stock firm of Merrill Lynch, Pierce, Fenner and Beane, known variously on Wall Street as "We the People" or "The

Awards for safety

. . . are handed out for the New England Safety Council by Arthur Bowes, left, director of safety for B and W Lines, at the spring meeting of the New England Transit Club. Accepting for the winners are D. L. Foss, center, manager of Needham Transit Co., and A. J. Grimes, traffic manager of Interstate Passenger Service.

Double duty signs

. . . are used as safety devices and advertising messages by Indianapolis Railways. Otto Feucht, local banker points to his company's initial ad for Jack Harris, center, VP and general manager of IR, and Harry Reid, former Indianapolis president. The message is cut in stencil form and placed over material which reflects light.

hit the roads to bring Wall Street to Main Street

Thundering Herd." We the People has set up three plush rolling offices to serve its customers in the hinterlands . . . give them the latest stock quotations and a little advice on wise investments. In fact, Merrill Lynch thinks its three Marmon-Herringtons are a wise investment. It considers them a logical step in getting as many people as possible to own a share of American business. The buses resemble regular passenger vehicles from the outside. Interiors are in four separate sections: one for the driver, two private offices and a board room where the latest quotations—received over radio-telephone—are listed for potential investors.

Heroism is rewarded

. . . with an appropriately engraved gold watch for Maxwell Windham, Philadelphia Transportation Co. employee, who risked his life by holding a fellow worker motionless when the man fell as a train was approaching. Robert Stier, operating VP, presents the "PTC Award for Valor" while Superintendent James Weston looks on.

Buses are vital

. . . in the life of the community. And to point up its importance to Harrisburg, Harrisburg Railways opened a booth at a recent exposition. The booth, which served as the show's information center, was decorated with easy-to-read cards telling the company's story and stressing its value to the city it serves.

PR and Maintenance Highlight Meeting Of ATA in Detroit

• THE AMERICAN TRANSIT ASSOCIATION'S Public Relations Division, meeting in Detroit at a three-day ATA regional meeting, announced its plans to present a complete PR package at the annual ATA meeting in September.

Public relations talks were part of the mid-year divisional conferences attended by almost 300 ATA members from 19 states and Canada. Two-day sessions were held on public relations and maintenance and one-day meetings were conducted on management and small operations.

Using Virginia Transit Company's program as a guide (See March BT, p. 25), the division's PR package is designed for building a public relations-sales promotion program suitable for any transit outfit.

The program will cover employee attitudes and performance, advertising media, press relations, dissemination of information, community relations, ride promotion and other activities.

Three-day refresher courses, emphasizing the personal angle, do a good job of keeping drivers on their toes, according to Elmer Scheumann of United Motor Coach in Des Plaines, Ill. Such courses remind drivers that they are the company's representatives . . . give them some facts on the operation of the company.

A discussion on the benefits of outside advertising, in which Paul Dittmar of South Suburban Safeway was a key speaker, drew wide comment. So much, that the division passed a resolution to study it further.

The Mechanical Division devoted the first morning meeting to motor bus maintenance.

Fred Taylor of Detroit Street Railways presented papers on "More Life from Batteries" and "Shop Layout."

Taylor told maintenance men that improvement of shop layout was a

Continued on page 112

PAUL DITTMAR, chairman of the management conference, addresses ATA members on one of his favorite subjects—"Transit Pars." He came up with convincing figures . . . told of companies using them with success. ATA President Laurence Wingerter, right, also spoke.

PROGRAM COMMITTEE holds a last-minute briefing on maintenance sessions. Left to right, W. A. Keller, Pittsburgh; Walter Rainville, ATA; Carl Koch, Cleveland; Fred McManus, PS of New Jersey; E. C. Krueger, Indianapolis, and Lou Pauley, Twin City.

SMALL OPERATIONS DIVISION held well attended sessions on the final day. Taking part were, left to right, Ken McKee, ATA; Ray Fey, Eau Claire; R. F. Mears of Lansing, morning chairman, and Jim Gibb of Lansing, the afternoon chairman.

WILLIAM TIGHE of Pittsburgh Railways gets the ball rolling at the opening session of the Public Relations Division conferences. Seated at head table are, left to right, Ray Turk, Cleveland; Tighe; Walter McCausland, Niagra Frontier, and Laurence Wingerter, San Antonio Transit and ATA president. PR men plan to unveil a PR program at the annual ATA meeting.

MAINTENANCE PANEL on "How Can We Save Money?" starts the second day's mechanical program. An informal discussion followed with operators exchanging ideas. Taking part are, left to right, W. Rainville, ATA; Frank McManus, PS of New Jersey; Bill Kunz, Niagra Frontier; E. C. Krueger, Indianapolis; Wallace Henry, Memphis, and T. A. Smith, Louisville.

INFORMAL TALKS give convention-goers a chance to swap ideas . . . give them a break in the three-day grind. Caught by the camera are, left to right, C. N. Galloway, Virginia Transit; C. E. Moore, Flint Trolley Coach Co.; H. Van Shoten, Grand Rapids, Mich.; Tom Butts, Globe Tickets; J. R. Hamilton and Leo Hall, both of Flint Trolley, and Bill Mortz, Globe Ticket.

ABOUT PEOPLE . . .

OSCAR W. REXFORD has been elected vice president and operating manager of St. Louis Public Service Company. With the company since 1946, he has been operating manager since 1952.

WILLIAM A. BAKER has been appointed to the newly-created position of general manager of Denver Tramway Corp. He is currently general manager of Pacific City Lines, a subsidiary of National City Lines.

EDWARD M. DEHARNE, vice-president and general manager of the Honolulu Rapid Transit Company, has been elevated to the position of president of the company. He will still continue as general manager.

W. G. STEPHENSON has joined the Southern Coach Manufacturing Company as vice president. He has been with the White Motor Company for the past 31 years, the last 13 as southern regional manager.

DONALD C. BAKER has been appointed assistant manager of the Akron branch of A. Schrader's Son, division of Scovill Manufacturing Company, Inc. He has been affiliated with the company since 1948.

CHARLES W. TROUT, vice-president and director of sales of Oneida Products Corporation, has been re-elected president of the School Bus Body Manufacturer's Association, with headquarters in New York.

COL. SIDNEY H. BINGHAM, general manager of the New York City Transit Authority, has been appointed executive director of the authority. He formerly was chairman of the Board of Transportation.

ALTON McDONALD, former assistant secretary-treasurer of the City Bus Lines of Clarksburg (W. Va.), has been named treasurer of Green Lines in Kentucky. He has been in transportation for 25 years.

BERNARD T. ROBB has been appointed traffic engineer for the Green Lines System. He was formerly schedule supervisor of the Washington, Virginia and Maryland Coach Company in Virginia.

HARRY B. BUDD has been appointed sales manager of the eastern division of Flxible Company. He will supervise sales efforts of all the firm's sales representatives in the eastern half of the United States.

HENRY HUBER has been appointed general assistant to the chief engineer for the Flxible Company. Prior to joining Flxible, he was affiliated with the motor coach division, White Motor Company.

JOSEPH R. ROBERTS, formerly supervisor of industrial power advertising and sales promotion for International Harvester Company has been appointed advertising manager for Aeroquip Corporation.

LARRY DELP, vice-president and general manager of Chicago Gray Line Sight-Seeing Company has been elected president of the Skal Club of Chicago. He is also treasurer of the Gray Lines Association.

JOHN A. CHAPIN has been appointed general sales manager of the Gray Line Sight-Seeing Companies Association. He has been a hotel executive and is a former manager of The Greyhound Travel Bureau.

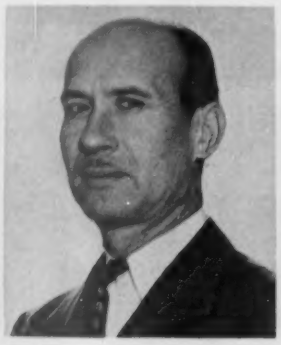
ROBERT W. BUDD has been elected president of the National Travelers Aid Association. He is president of the Great Lakes Greyhound Lines and has been a director of the association since 1950.

H. V. LUIKART, secretary-treasurer of Quaker City Bus Company has retired after twenty-two years of service. Prior to his association with Quaker, he was affiliated with the White Motor Company.

FRED E. PEACOCK has been appointed technical service manager for the Power Brake Division of the Midland Steel Products Company in Detroit. He formerly was with the National Pneumatic Company.

FOREST B. ARNOLD has been named fleet service engineer of Thermoid Company's Automotive Replacement Division. He had been associated with the ACF-Brill Company for 26 years.

Savage



Phillips

Sherbert

Keithley

Capital Transit Company announces four appointments . . .

. . . Alfred E. Savage has been appointed director of the mechanical department. J. M. Phillips, superintendent of street car maintenance; T. L. Sherbert, superintendent of automotive maintenance; and F. A. Keithley, Jr., supervisor of automotive shops.

M. E. MOORE has been re-elected president of Transcontinental Bus System at the annual stockholders meeting held in Dallas, Tex. Others re-elected: T. S. Reece, and A. J. Emory, vice-presidents; Carl B. Calloway, vice-president and general counsel; and M. S. Maloney, secretary-treasurer.

HERBERT E. BICKEL, director of public relations for Virginia Transit Company has been appointed chairman of the Transit Progress Week committee of the American Transit Association.

BUS AND TROLLEY BUS DELIVERIES

Motor Bus Deliveries	Number of Buses	Manufacturers	Model and Types	Seats
Birmingham Transit Co. (Ala.)	1	Southern	S-41 HF	41
Camden & Burlington Counties Bus Company (N.J.)	1	GMC	TGH-3102	31
Carolina Coach Co. (N.C.)	25	GMC	PD-4104	41
Central Greyhound Lines Inc. of New York (Ohio)	4	GMC	PD-4104	41
Charleston Transit Co. (W.Va.)	10	GMC	TDH-4512	45
Chicago Transit Authority (Ill.)	32	Flxible	FL-2P-40	52
Clifton Buses Inc. (N.J.)	2	GMC	PD-4104	41
The Columbus Marysville Bus Co. (Ohio)	2	Flxible	218GM1-54	29
The Dixie Traction Co. (Ky.)	1	Flxible	182B1-54	25
Geneva Transit Corp. (N.Y.)	1	GMC	TGH-3102	31
Great Lakes Greyhound Lines (Mich.)	8	GMC	PD-4104	41
Hudson Bus Transportation Co. (N.J.)	3	GMC	PD-4104	41
Kentucky Bus Lines (K.Y.)	1	Flxible	218F1-54	29
Maine Central Transportation Co. (Me.)	5	GMC	PD-4104	41
New England Greyhound Lines Inc. (Mass.)	3	GMC	PD-4104	41
New Mexico Transportation Co. (N.Mex.)	2	Flxible	218GM1-54	29
Northland Greyhound Lines Inc. (Minn.)	7	GMC	PD-4104	41
Northwest Greyhound Lines (Wash.)	5	GMC	PD-4104	41
Overland Greyhound Lines (Nebr.)	3	GMC	PD-4104	41
Pacific Greyhound Lines (Calif.)	75	GMC	TDM-4801	48
Pacific Greyhound Lines (Calif.)	10	GMC	PD-4104	41
Pennsylvania Greyhound Lines (Ohio)	10	GMC	PD-4104	41
Philadelphia Surburban Transportation Co. (Pa.)	6	GMC	TDH-4512	45
Queen City Coach Co. (N.C.)	5	GMC	PD-4104	41
Jack Rabbit Lines, Inc. (S.D.)	1	Flxible	218B1-54	29
St. Joseph Light & Power Co. (Mo.)	1	Southern	S-36 DHL	36
Smoky Mountain Tours Co. (N.C.)	1	Flxible	182B6-54	25
Southern Coach Lines Inc., (Tenn.)	8	Southern	S-45 HF	45
Torrance Municipal Bus Lines (Calif.)	1	GMC	TDH-4512	45
Vermont Transit Co., Inc. (Vt.)	4	GMC	PD-4104	41
Vicksburg City Lines (Miss.)	1	Fitzjohn	Cityliner	29
White's Motor Transport (Iowa)	1	Flxible		29
Wichita Transportation Co. (Kan.)	10	Flxible	FLP-33	40
Miscellaneous Deliveries				
American Orchestra Co. (N.J.)	1	GMC	PD-4104	41
Michigan College of Mining & Technology (Mich.)	1	Flxible	218B1-54	29
Foreign Deliveries				
Atomic Energy of Canada Ltd. (Canada)	4	Flxible	218F7-54	40
General Motors Corp. Foreign Distributors Division (N.Y.)	1	GMC	PD-4104	41
General Motors Overseas Operation (N.Y.)	1	GMC	TDH-5105	51
Trans. Monterrey Saltillo S.A. (Mex.)	1	Beck	BM-37	Special
J. Guadalupe Lopez Valarde (Mexico)	1	Flxible	218JBSI-53	28

Total deliveries reported in this issue.. 260

NOTE: This list is based on monthly reports from manufacturers. Not all manufacturers report regularly, consequently, this list is not to be considered complete.

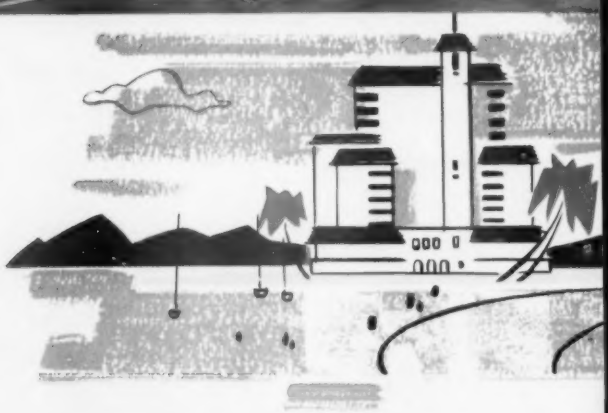
"We're operating our GM Diesels

300,000

miles before major overhaul!"

record of GM *Diesels*

at Honolulu Rapid Transit Co.



Year	Number of Buses	Model	Year in Service	Yearly Miles	Accumulated Mileage	Av. Miles Per Bus	Av. Miles Per Gal.	1304, 1305 Maint. Cost/Mi	1315 Fuel Cost/Mi	1316 Oil Cost/Mi	Total Cost/Mi
1950	50	TDH-4507	1947	2,683,785	9,778,972	53,676	5.44	$.0380	$.0330	$.0025	$.0735
1951	50	TDH-4507	1947	2,528,035	12,307,007	50,561	5.28	.0380	.0359	.0028	.0767
1952	50	TDH-4507	1947	2,663,784	14,970,791	53,276	5.23	.0453	.0404	.0029	.0886
1953	50	TDH-4507	1947	2,547,774	17,518,565	50,955	5.22	.0602	.0445	.0029	.1076

35% lower seat mile operating costs

E. M. DEHARNE
President and General Manager
Honolulu Rapid Transit Company
"The Diesels are the workhorses of our fleet . . . and offer the best solution toward a profit today . . ."

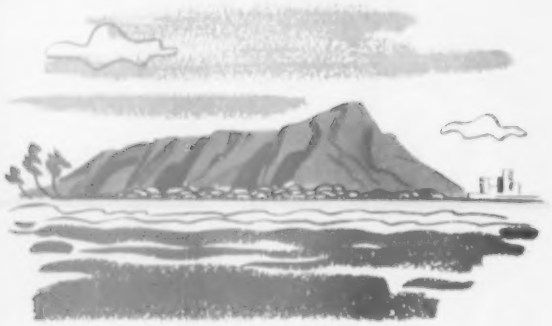
Fifty 45-passenger GM Diesels operating on an average of more than 50,000 miles yearly have turned in an impressive record during the past six years at Honolulu Rapid Transit Company, Hawaii.

The system operates 185 route miles in Honolulu and outlying areas, including the world-famous Waikiki Beach.

By comparison with other groups of equipment on the property, the Diesels' seat mile cost is 35% lower. Fuel mileage is nearly double that of their gasoline-powered coaches – (5.09 vs. 2.88).

The Diesel fleet is averaging better than 300,000 miles before major overhaul, compared to 75,000 with gas-powered coaches . . . and at a 20% lower cost too – due to simpler design and accessibility, the company reports.

Last year the company began upgrading its fleet to larger capacity models with the purchase of 15 GM 51-passenger models.



LIKE many progressive companies on the mainland, this operator has been quick to take advantage of the economies of GM 51-passenger Diesels.

All the time-tested features of GM Diesel equipment, plus increased capacity, make these coaches the best investment for a profit in transit today.

These large capacity models make possible a saving in route vehicles, especially trippers, reducing platform costs. Their flexibility permits scheduling anywhere, anytime, to meet changing conditions, and gain maximum revenue.

Air Suspension, most revolutionary automotive development of our time, is proving a big attraction for riders, – at the same time reducing maintenance.

Over 2,700 GM 51's are already in service on more than 50 properties.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

GM GENERAL MOTORS COACH

PRINTED IN U.S.A.

SASH FOR EVERY TYPE OF TRANSPORTATION—ON LAND, ON THE SEAS, IN THE AIR

"Picture windows this big!"

EDWARDS SASH...

- Maximum Visibility
- Streamlined Construction
- Quick, Easy Glass Replacement
- Rattle-free, Weather-tight Fit
- Fingertip Opening and Closing

THE NEW GM INTERCITY COACH — MODEL PD-4104. Air Suspension Ride . . . Diesel Power . . . Equipped with 72½" Edwards Sash for maximum visibility.

Boys measure things by size. If a thing is **big,** it's **good** . . . and the **bigger** the **better!** But leading bus builders **and** profit-minded operators choose Edwards Sash for more than sheer **bigness.** Maximum visibility . . . **plus** lower maintenance and long-life dependability are among the big reasons why leaders in the transportation industry specify Edwards Sash. Whether your service is city, interurban, suburban or cross-country, there's an Edwards Sash that meets exactly — and economically — every operating and service requirement. Write us for complete information.

THE O. M. EDWARDS CO., INC., SYRACUSE 4, N.Y.
New York Office—50 Church St., N.Y. 7, N.Y.
In Canada: **O. M. EDWARDS CO. OF CANADA LIMITED**
Offices and Plant
335 Laurentian Boulevard,
St. Laurent, Montreal 9, P.Q.

Dulux® Enamel keeps smart style

in teeming New York City traffic

SERVING passengers from fashionable Fifth Avenue to New York's bustling West Side, the Fifth Avenue Coach Company must have a *double-duty* finish for their buses. They need Tenth Avenue toughness as well as Fifth Avenue appearance . . . get *both* with DULUX enamel!

A special flexible resin gives DULUX exceptional resistance to scratching and cracking, even in traffic of America's largest city. And DULUX is chemically formulated to fight the corrosive action of salt air and city smog. So DULUX colors stay glossy-bright, come sparkling clean at every washdown.

DULUX sprays on smooth, dries quickly to a high gloss. Buses stay *out* of the shop longer between repaint jobs! So for a finish that combines both rugged durability and lasting beauty, take a tip from the Fifth Avenue Coach Company—

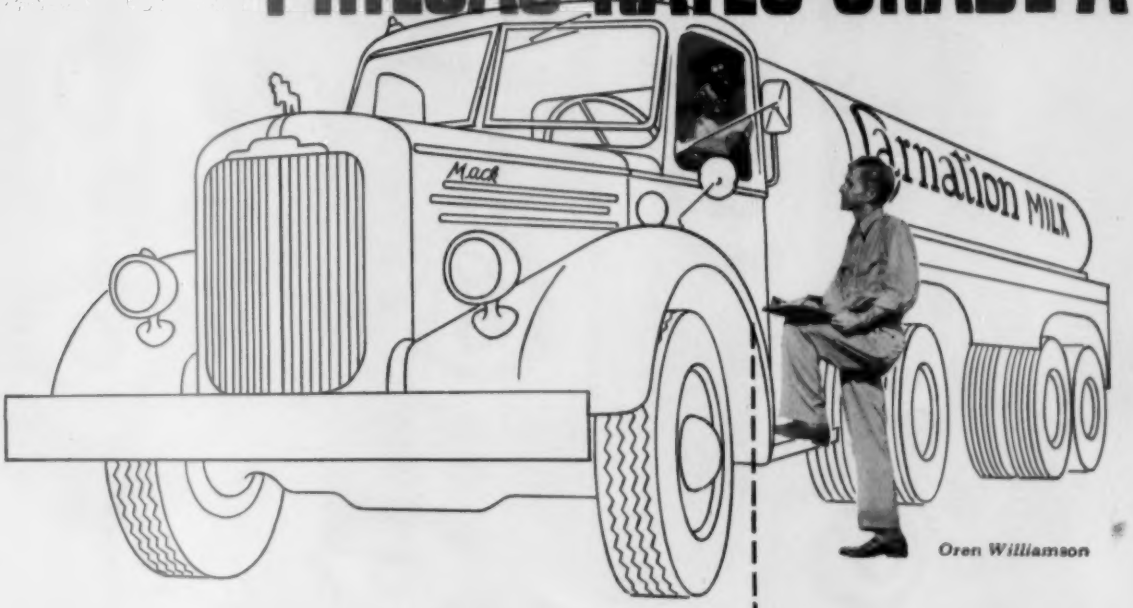
Keep your fleet looking its best *always in all ways* with Du Pont DULUX Enamel! E. I. du Pont de Nemours & Co. (Inc.), Refinish Sales, Wilmington, Delaware.

MR. J. A. MORELAND, Vice President in Charge of Maintenance, is proud of the smart appearance of DULUX Enamel on the buses of the Fifth Avenue Coach Company and New York City Omnibus Company. He knows DULUX stands the gaff, too. It logged 27 million miles on his combined fleet last year!

DU PONT **DULUX®** enamel

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

WITH CARNATION MILK PHILGAS* RATES "GRADE A"



Oren Williamson

Carnation's veteran garage foreman doesn't hesitate. Oren Williamson flatly states, "I've used a lot of motor fuels . . . there's none finer than Philgas." Williamson speaks with plenty of experience. Since 1938, Carnation has used Philgas to operate trucks of their Mt. Vernon, Mo. plant. Hauling fresh milk, trucks travel up to 12 hours a day, average 1,200 miles a week over the Ozark mountains. A look at the records shows why Williamson likes Philgas.

Of their present 11 trucks, five are 1947 Mack EN 510's that have each gone over 400,000 miles without a major overhaul. No wonder that Carnation relies on Philgas to power their fleet. Says Williamson, "With Philgas our engines cost less to operate . . . need less maintenance . . . last the life of the trucks."

Philgas has proven itself as an efficient, economical fuel in trucks, buses, construction equipment, taxicabs . . . wherever internal combustion power is needed. Investigate. Find out how you can get added power, added savings with Philgas. Write for full information.

CHECK THESE PHILGAS ADVANTAGES

- ✓ **Burns completely with no oil dilution —less contamination.**
- ✓ **Low fuel cost—lowers operating costs.**
- ✓ **No cylinder wall washing—lower cylinder wear.**
- ✓ **Longer ring and valve life.**
- ✓ **Cuts maintenance—thousands of miles more before overhaul.**
- ✓ **Quieter, no knocking—no smelly fumes or exhaust smoke.**

Phillips 66 Philgas
THE ALL-PURPOSE FUEL

*Philgas is the Phillips Petroleum Company trademark for its high quality LP-Gas or bottled gas (butane, propane).

PHILLIPS PETROLEUM COMPANY

SALES DEPARTMENT, *Bartlesville, Oklahoma*

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INDIANAPOLIS, IND.—*1112 N. Pennsylvania St.*
KANSAS CITY, MO.—*500 West 39th St.*
MINNEAPOLIS, MINN.—*212 Sixth St. South*
NEW YORK, N. Y.—*80 Broadway*
OMAHA, NEB.—*WOW Building*
RALEIGH, N. C.—*16 W. Martin St.*
ST. LOUIS, MO.—*4251 Lindell Blvd.*
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1 out of every 3 cars in America

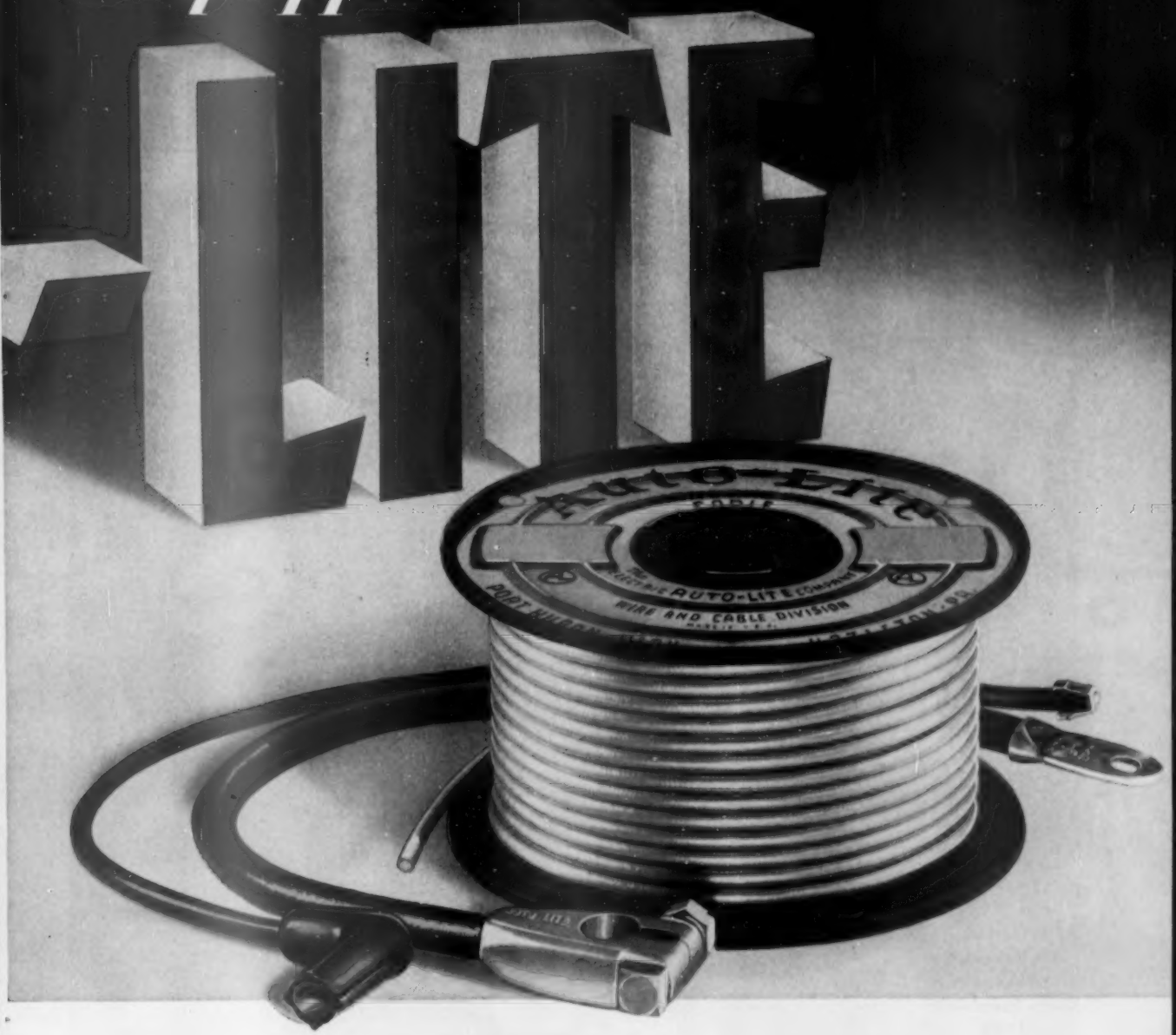
How Auto-Lite LEADERSHIP

Throughout the world, Auto-Lite Ignition Engineering is contributing to the growing service being rendered by the vast fleets that travel wherever highways run. In this exacting duty you will find unquestionable proof of the dependability which has made Auto-Lite world-famous . . . the choice of leading manufacturers of cars, trucks and tractors. The record proves the soundness of the phrase . . . "YOU'RE ALWAYS RIGHT WITH AUTO-LITE."

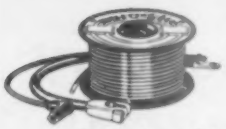
Tune in "Suspense!". . . CBS Radio Mondays . . . CBS Television Tuesdays

is equipped with

LITE



helps cut operation costs



America's fleets have testified these improved Wire and Cable Products give them best ton-mile performance

Only Auto-Lite offers you a complete line of wire and cable for every fleet need. Neosheath (Steelductor or copper wire) for top spark plug performance . . . Auto-Lite Battery Cable with exclusive Anti-Corrode terminals for longer life . . . and Plastic, Braided, Flextrand, Neoprene, Loom Braided wire. Test Auto-Lite Wire and Cable yourself and see why operators from coast to coast report better performance . . . lower costs. See your Auto-Lite salesman or write

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WINNER
Bill Vukovich
Indianapolis
Motor Speedway
1953

When a lifetime of effort, a small fortune, and perhaps your life itself, are at stake, you don't compromise with quality. Winners like Bill Vukovich must know that they have the very finest maintenance equipment. To be sure, he compared competitive equipment. After comparison he chose a SIOUX Precision Engineered Valve Face Grinding Machine and a SIOUX Valve Seat Grinder Set! In your shop too, you will appreciate the speed, the precision, the dependability of SIOUX Valve Servicing Equipment. And, taking the quality in to consideration you'll be surprised how little it costs.

USE SIOUX
ALL THE WAY THROUGH!

Electric Drills, Sanders, Polishers, Bench Grinders, Abrasive Discs, Portable Grinders, Valve Seat and Face Grinders, Electric Hand Saws, Flexible Shafts.

SIOUX

STANDARD THE WORLD OVER!

Sold only through authorized SIOUX distributors

ALBERTSON & CO., INC.
SIOUX CITY, IOWA, U.S.A.

Bendix-Eclipse

BRAKE BLOCKS AND LININGS

The Most Trusted Name in Braking ASSURES DEPENDABLE PERFORMANCE

When it comes to *braking*, the name "Bendix" is one of the most respected names in the trucking industry. That's because truck operators everywhere have long recognized the fact that Bendix brakes are the finest in their field for dependability and long, trouble-free life.

The same is true of Bendix-Eclipse* Brake Blocks and Linings. For the same engineering know-how that has made Bendix the byword in braking has made Bendix-Eclipse Brake Blocks and Linings tops for *dependable performance* in their field, too. Try them on your trucks—you'll be a steady Bendix-Eclipse booster from then on!

*TRADE-MARK

MARSHALL-ECLIPSE DIVISION OF
TROY, NEW YORK

THE NAME Bendix AVIATION CORPORATION MILLIONS TRUST

JOHNSON TYPE "J" and TOKENS

...Give You FARE Collection Instead of Money Collection

The Johnson Type "J" is still today's smallest and lightest-weight automatic electric fare box. It's lowest in cost, too. Dimensions: 15½" high, 7" wide, 5" deep. Weight 19 pounds, 2 ounces.

The combination of the Johnson Type "J" Automatic Electric Fare Box and Johnson metal fare tokens offers the simple solution to today's complex fare structures. With tokens, you have the practical answer to those hard-to-collect multi-coin fares plus an unlimited range of fare adjustments. With the Johnson Type "J," you have efficient collection with complete revenue protection. Every fare is automatically registered and classified. The token or coin does all the work. To speed up schedules with safety and safeguard your revenues, get full details on this dependable Johnson system, proven in service since 1923.

Johnson

Johnson Fare Box Company
Subsidiary of Bowser, Inc.

4619 North Ravenswood Ave., Chicago 40, Illinois
New York Office: 420 Lexington Ave., New York 17, N. Y.
Boston Office: 35 Leon Street, Boston, Mass.

JOHNSON IS ALSO PROTECTING BILLIONS IN U.S. BOMBER INVESTMENTS WITH PRECISION ARMAMENT EQUIPMENT

SPICER

Spicer developed and perfected the first practical, mass-produced universal joint for automotive use.

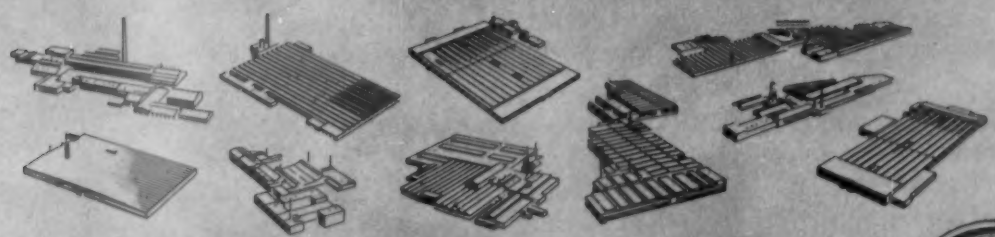
DANA

The Dana Corporation had its founding in the Spicer Corporation in 1904, and now is recognized as one of the world's leading suppliers of automotive components.

SPICER

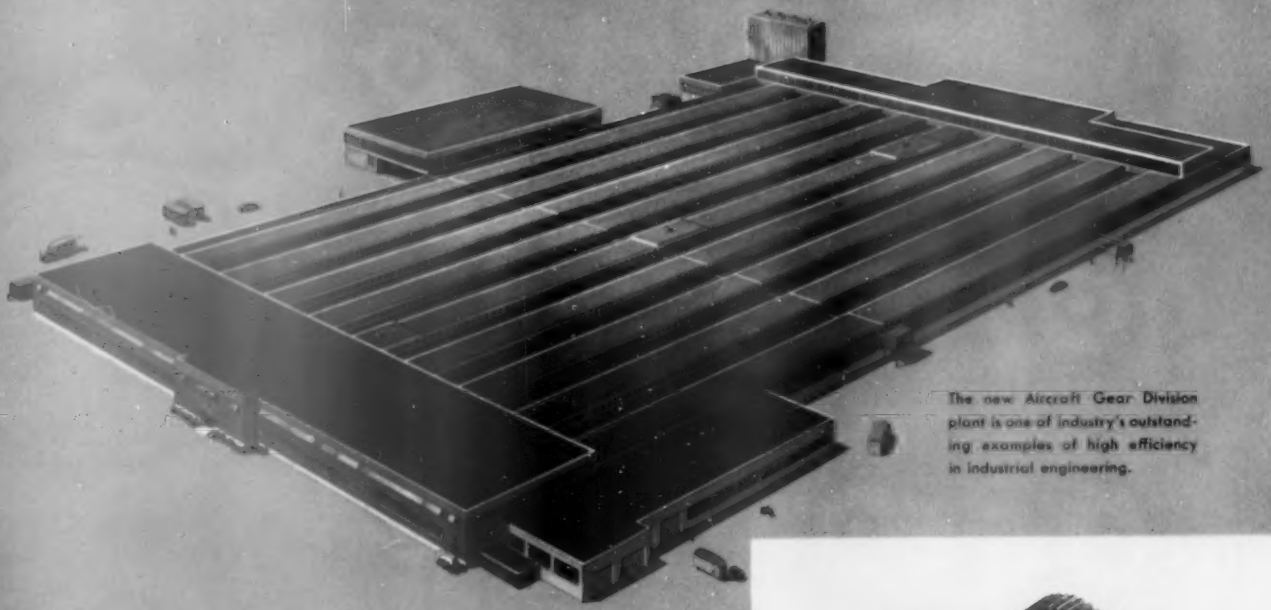
Spicer power transmission equipment in a wide variety of types is used as standard equipment on a majority of the world's automotive vehicles.

DANA



The Dana Corporation produces in its 10 modern domestic plants, and associated plants in Canada, Great Britain and France, the following products: transmissions, universal joints, propeller shafts, Brown-Lipe and Auburn clutches, forgings, axles, stampings, Spicer Brown-Lipe gear boxes, Parish frames, torque converters, power take-offs, power take-off joints, rail car drives, railway generator drives, aircraft gears, and welded tubing.

THIS IS THE AIRCRAFT GEAR DIVISION IN FORT WAYNE, INDIANA



The new Aircraft Gear Division plant is one of industry's outstanding examples of high efficiency in industrial engineering.

PRECISION GEAR PRODUCTION

complying with the most rigid military and aircraft engine producers

The Aircraft Gear Division plant was built by the Dana Corporation for the specific purpose of manufacturing gears and similar parts, and complete gearing assemblies, to the finest precision standards.

This ultra-modern plant carries into the aircraft field the Dana-Spicer tradition of ingenuity, quality and service, which has become so firmly established in the automotive industry during the past 50 years.

Look to Dana and Spicer for excellence in engineering . . . careful manufacturing . . . and everyday well-managed administration of service.

SPICER MANUFACTURING DIVISION
of Dana Corporation • Toledo 1, Ohio

50 YEARS OF Spicer SERVICE

ENGINEERING
DANA
MANUFACTURING

TRANSMISSIONS • UNIVERSAL JOINTS • PROPELLER SHAFTS • BROWN-LIPE and AUBURN CLUTCHES • FORGINGS • AXLES • STAMPINGS • SPICER BROWN-LIPE GEAR BOXES • PARISH FRAMES • TORQUE CONVERTERS • POWER TAKE-OFFS • POWER TAKE-OFF JOINTS • RAIL CAR DRIVES • RAILWAY GENERATOR DRIVES • AIRCRAFT GEARS • WELDED TUBING

RESISTS HEAT

Gates®
The mark of specialized research

Look for this TG*

Look for these letters "TG" on the belt itself—as well as on the label—of every belt you buy for rear engine service. "TG" means that the belt has been specially engineered for Coach Rear Engines.

*Reg. U.S. Pat. Office

1. Stands up under heat

Heavy operating loads imposed on rear engines may often produce intense heat. Special rubber compounds make the Gates Coach Belt *highly heat resistant.*

2. Stands up under oil

The same special rubber compounds which make the Gates Coach Belt heat resistant also make it *oil-proof.*

3. Stands up far L-O-N-G-E-R

Engineered specifically for heavy duty application, the Gates Coach Belt has a tough, flexible, multiple-ply cover. And the tensile section—the part that carries the load—is built with special *rayon cords*—of extra high tensile strength.

How Gates TG Belt helps public relations

Cutting down traffic delays is one way to maintain good public relations. Actual performance records of leading transit companies show that the Gates Coach Belt—the belt marked "TG"—has more than *twice* the service life of any other belt they have used. This far longer life actually helps public relations—by practically eliminating traffic delays caused by belt failures.

These same performance records show another big advantage in Gates Coach Belts—the double service life *cuts belt costs in half.*

There is a Gates Jobber in every distributing center. Call *your* Gates Jobber for prompt delivery of the Gates Coach Belts you need... and for the help of a Gates Coach Belt specialist if you want it.

The Gates Rubber Co., Denver, U.S.A.—*World's Largest Maker of V-Belts.*

A-30

Gates Coach Belts

Specially Engineered for REAR ENGINES

13 BUSES ...6½ MILLION MILES...

90,000 MILES AVERAGE RING LIFE WITH CITIES SERVICE GASOLENE, OILS, GREASES!

Traveling over the rugged, hilly terrain around Lafayette, Indiana, thirteen coaches of the Greater Lafayette Bus Company have rolled up over one-half million miles each using Cities Service lubricants. Reporting on their condition, President E. J. Bannon says: "All have the original crankshafts ...average ring life is approximately 90,000 miles...bearing life has also been excellent."

USE POWER PROVER FOR FUEL ECONOMY

In addition to Cities Service Lubricants, Greater Lafayette has also taken advantage of the portable Power Prover, the remarkable power-testing unit supplied free by Cities Service. With this device, the company checks the combustion efficiency of its buses every 1500 miles to insure "maximum power and efficient gasolene mileage," says Mr. Bannon. "Cities Service Regular Gasolene, C-900 Motor Oil and Trojan A Greases in conjunction with the Power Prover are giving us excellent operations and we heartily recommend these products to other fleet operators."

USING CITIES SERVICE POWER PROVER, maintenance man checks combustion efficiency of Greater Lafayette bus. Power Prover is supplied free by Cities Service.

CALL OR WRITE YOUR NEAREST CITIES SERVICE REPRESENTATIVE OR CITIES SERVICE OIL COMPANY, SIXTY WALL TOWER, NEW YORK 5, N. Y.

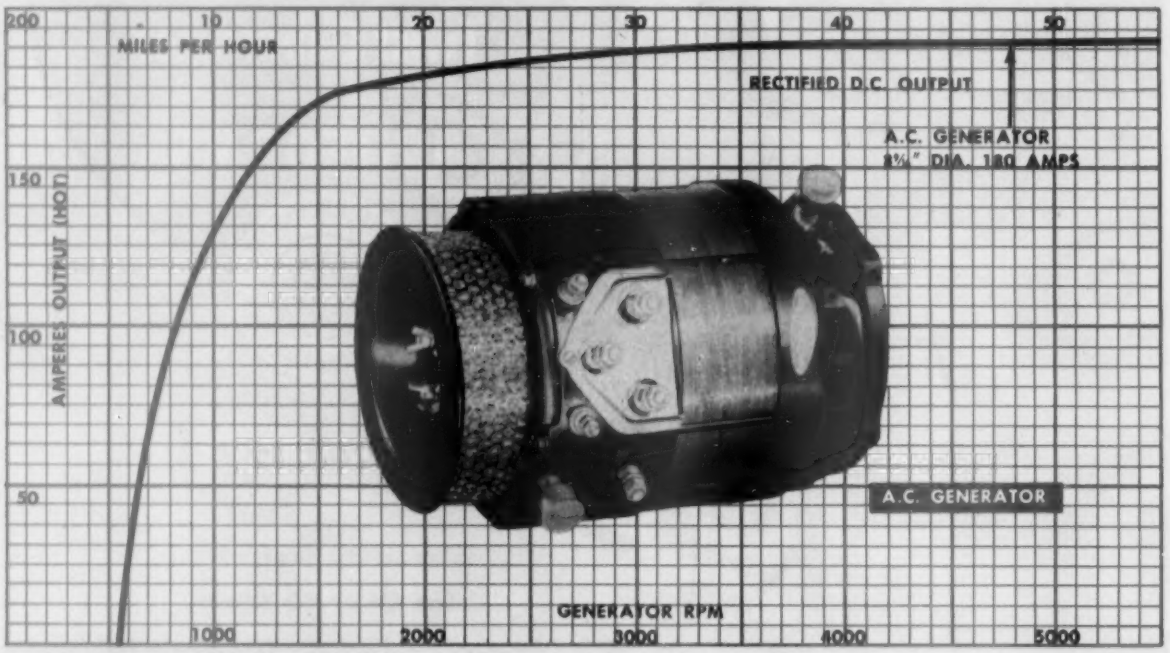
CITIES SERVICE
QUALITY PETROLEUM PRODUCTS

Metcalf
100% WOOL
Twist Gabardines
FOR
UNIFORMS
UNIFORM CLOTH
METCALF BROS. & CO. INC.
WHEN BUYING A UNIFORM . . . LOOK FOR THE TRADE-MARK ON THE BACK OF THE FABRIC. IT IS YOUR GUARANTEE OF UNIFORMITY IN COLOR AND SERVICE.
Woven by Metcalf...
for Over 85 Years,
Leaders in Fine All Wool Fabrics
Metcalf-controlled from yarn to finished fabric for quality, good looks, durability, warmth. Woven with a hard finish that resists friction at all points of wear, retains its smart appearance. In 12 oz., 14 oz., 16 oz., weights. Colors: Blue Mixture, Brown Mixture, Green Mixture, Oxford. Good fabrics for good uniforms.
METCALF BROS. & CO., INC.
45 EAST 17th STREET, NEW YORK CITY
FOR UNIFORM SATISFACTION

Power Packed and

DELCO-REMY A. C. GENERATOR

Heavy-Duty 180-Ampere Output Capacity



Rectifier

Regulator

The Delco-Remy A.C. generator is the heart of a 12-volt A.C.-D.C. electrical system designed specifically for modern buses with fluorescent lighting and extra-heavy electrical loads.

Desirable performance characteristics include cut-in at approximately 550 generator rpm . . . maximum output of 180 amperes at approximately 2000 rpm. The new generator supplies not only alternating current for fluorescent lights but also ample direct current for the heaviest electrical loads coupled with lengthy engine-at-idle periods.

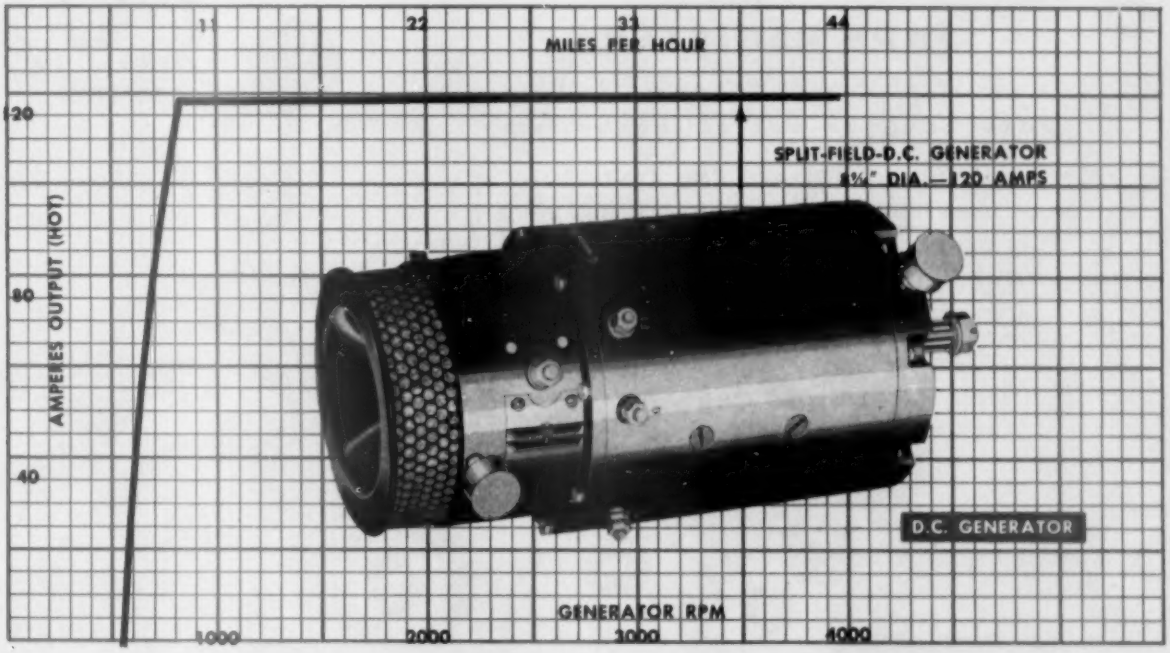
Impressive features of the new generator are its light weight, its very high output capacity, and its ability to operate over a wide speed range with greatest efficiency. Specify Delco-Remy electrical equipment on your new buses.

WHEREVER WHEELS TURN OR PROPELLERS SPIN

Right for the Job

DELCO-REMY D. C. SPLIT-FIELD GENERATOR

Heavy-Duty 120-Ampere Output Capacity



Regulator

The Delco-Remy 12-volt split-field generator and its companion regulator are rugged and dependable—designed to meet the needs of transit buses having increased electrical loads coupled with a high percentage of engine idling time.

Desirable performance characteristics include low cut-in, high output at engine idle, and quick attainment of maximum output. Cut-in occurs at approximately 550 generator rpm . . . output reaches 70 amperes at approximately 700 rpm . . . maximum controlled output of 120 amperes above 850 rpm.

Operating benefits include reduced battery cycling, long battery life, and a simplified electrical system with sustained voltage — at no sacrifice in ruggedness or dependability. Specify Delco-Remy electrical equipment on your new buses.

Delco-Remy

DIVISION, GENERAL MOTORS CORPORATION, ANDERSON, INDIANA

WHEREVER WHEELS TURN OR PROPELLERS SPIN

Presenting THE NEW

ROCKWELL Ohmer CLASS 125

RETURN-O-MATIC

FARE REGISTER

You Will Fare Best With This Fare Revenue Protecting System

ACCEPTS ALL THESE COINS AND TOKENS

REGISTERS COINS IN DOLLARS AND CENTS TOTAL

The electric Return-O-Matic accepts and registers coins up to and *including quarters* on a single cash totalizing counter. Two sizes of tokens record on separate counters. It registers *fast*—up to 70 coins and tokens per minute. The continuous, tamper-proof counters always show how much cash and how many tokens you should have. By reducing computations these counters speed turn-ins, stop errors. They provide better control over your daily collections.

Bent Coins, Foreign Objects Are Rejected and Trapped

All mutilated coins and other non-registerable items are mechanically culled out ahead of registration. Such objects are dropped into a container locked inside the case. This feature assures a complete accounting, prevents mechanical failures and eliminates costly road calls.

PENNY INDICATION FEATURE

A special indication feature calls attention to registration of pennies or coins distorted to the same size.

NO "OVER THE TOP" COLLECTION

In emergencies the Return-O-Matic will continue to accept fares with full protection over contents.

COIN RETURN

After registration, coins and tokens are returned to the operator—greatly reduces the daily cash outlay for change.

SAFETY CABINET

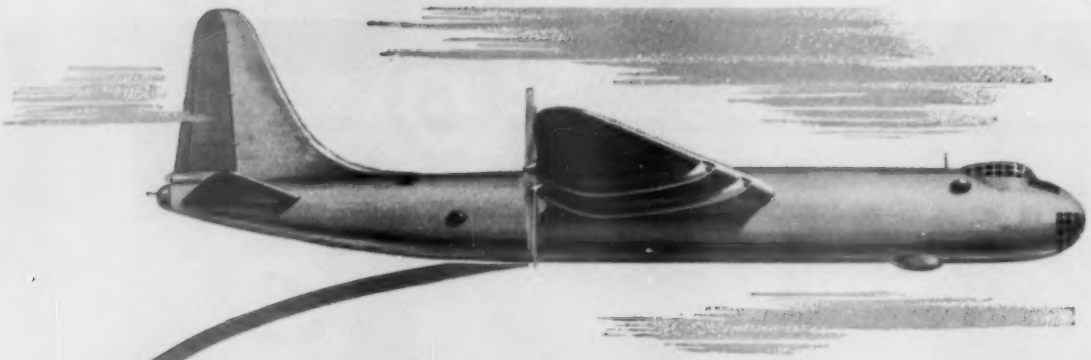
Absence of sharp edges plus convenient hand grasps prevent injuries due to "falling against the box."

Write For New Catalog

Made and Guaranteed by
ROCKWELL MANUFACTURING COMPANY
Register Division . . . Pittsburgh 8, Pa.

Nationally Distributed by
JOHN D. McGUIGAN, INC.
616 S. Michigan Avenue, Chicago 5, Ill.

JAMAICA
OMNIBUS SERVICES LIMITED
11th.
overseas country
to choose the
OLYMPIC
Jamaica is the latest country to buy Leyland MCW 'Olympics' and a fleet of ER44 buses has been supplied to the Jamaica Omnibus Company Ltd., for use in and around Kingston. These are 44-seaters which can, if required, carry exceptional loads during 'peak' periods. The reasons for selecting Olympics include strength and safety provided by chassisless construction, ease of maintenance and repair, high performance, reliability and the promise of a very long service life. The 125 b.h.p. direct injection oil engines are most economical and enable the Olympics to operate at a quarter of the fuel cost of the petrol engine vehicles they replace.
JAMAICA
Leyland
MCW



Bomber Engines or Bus and Truck Engines

AC Aviation Spark Plug

AC Automotive Spark Plug

AC Spark Plugs are designed to help your engines develop peak performance

You can have the same top-flight spark plug qualities in bus and truck engines that Air Force engineers specified for giant long-range bombers, because there's an AC Spark Plug engineered expressly for the engines in your equipment. As your maintenance men know — best way to *keep* that equipment's performance up to snuff — as sharp and responsive as the day you bought it — is to replace spark plugs when inspection indicates they are past their peak. Be sure to replace with genuine AC trigger-fast, power-boosting Spark Plugs. Then you'll get every advantage of AC patented *CORALOX* Insulators, the insulation material that set completely new standards of spark plug performance. Standardize on ACs in *your* maintenance.

AC SPARK PLUG DIVISION GM GENERAL MOTORS CORPORATION

AC SPARK PLUGS

Power Boosting *CORALOX* Insulator

Engineered to General Motors Standards for All Makes of Trucks and Coaches

BUCK-CYCLONE CLEANER

FOR REMOVING "TRASH" FROM TRANSIT BUSES

PATENT ALLOWED

For the first time in history it is now possible for one man to thoroughly clean the inside of buses in *two to three minutes* regardless of the accumulation of dust, dirt, paper or rubbish.

Don't spend *ten to twelve* minutes doing a mediocre job when a *superior* one can be done in

3 MINUTES!

"CHICAGO TRANSIT AUTHORITY" HAS 3— NOW 4 MORE PROPOSED

31 IN SERVICE

OR UNDER ORDER

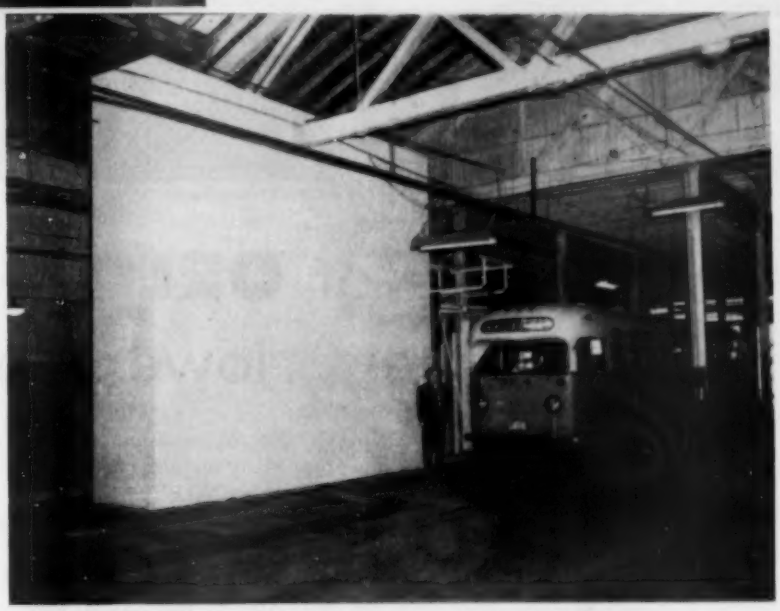
Reported Labor Savings:

$14,000 per year, one location

$9,600 per year another

$6,075 per year in Canada

Is 60c of your $1.00 spent for LABOR?



GARY RAILWAYS INC., GARY, INDIANA

ASK FOR BULLETIN 92 AND PRICE

CLYDE P. ROSS, *President* • **DAVID E. WHITE, *Vice President*** • **CARLETON P. ROSS, *Vice-President***
R. W. BURRILL, *Contracting Engineer*

MANUFACTURED EXCLUSIVELY BY

ROSS AND WHITE COMPANY.

CHICAGO DAILY NEWS BUILDING, CHICAGO 6, ILLINOIS

ABOVE: *Washable whipcord of "Orlon" and wool made by Day's Tailor-d Clothing Inc., Tacoma, Washington*

Uniforms of **ORLON** stay neat at the wheel... lower upkeep costs

Tests made by a number of large companies show that uniforms made with "Orlon" keep their neat, trim look with minimum care. It's further proof that these well-behaved uniforms hold their press and resist wrinkling through busiest days—just what's needed for drivers on your line.

Your supplier will point out that upkeep costs for these uniforms are low, too. Many uniforms made with "Orlon" are washable . . . need little or no ironing. Their ability to stay fresh and crisp even in muggy weather means fewer pressings, less expense for you. And drivers report that "Orlon" makes uniforms easy to clean —a damp cloth removes most spots, an ordinary spot remover takes care of grease and oil.

Additional tests show that "Orlon" adds extra durability to these uniforms. They show little sign of wear even after months of rugged service. More and more businesses are profiting by a change-over to uniforms made with "Orlon" acrylic fiber. Find out how its advantages can work for you! Just write your uniform distributor, or E. I. du Pont de Nemours & Co. (Inc.), Room 2522 Nemours Building, Wilmington 98, Delaware.

ORLON is Du Pont's trade-mark for its acrylic fiber. Du Pont makes fibers only, not garments

Orlon®
ACRYLIC FIBER
DU PONT
REG. U. S. PAT. OFF.

Better Things for Better Living . . . through Chemistry

FINANCIAL AID TO HIGHER EDUCATION

Our Colleges and Universities Face Grave Financial Problems

For the past decade the nation's colleges and universities have been caught in a destructive financial squeeze. It is particularly destructive for the independent, privately endowed institutions. Unless extraordinary measures are taken to relieve this squeeze, it promises to become progressively worse. To let it do that is to court a national disaster.

This is the first of two editorials devoted to the financial plight of our colleges and universities. This first editorial deals with the character of the problem, present and potential. The second will indicate some things that need to be done about it, and particularly what American business might do.

Enrollment Soars, Income Lags

In broad outline, the financial problem that afflicts our colleges and universities is simple. The demand for their services has increased rapidly, and promises to keep on increasing even more rapidly. At the same time, their financial capacity to provide these services has lagged behind, primarily because of price inflation.

Between 1940 and 1950, college and university enrollment increased from approximately 1⅓ million to 2⅓ million—about 75 per cent. Over the same period, the educational income of these institutions, measured in terms of its actual purchasing power, increased only about 64 per cent. Thus, at the end of the decade, our colleges and universities as a group had, on the average, about 6 per cent less to spend per student than they had at the beginning. Meanwhile, the rapid advance of science and technology had made a good college or university course a much more expensive operation than it was in 1940. Since 1950, the latest date for which comprehensive figures are available, the financial squeeze on our colleges and universities has intensified, largely because of another wave of price inflation touched off by the Korean War.

Among the colleges and universities, the independent, privately endowed institutions are particularly hard pressed. In terms of actual purchasing power, the independent liberal arts colleges are now spending at least 20 per cent less per student than they spent in 1940. Public institutions of higher learning, supported out of tax revenues, have managed to increase slightly their expenditure per student. Otherwise, the financial squeeze on higher education as a whole would be even more severe.

Why Independent Colleges Are Hit Hardest

The principal reason why the independent colleges and universities are so hard up is the shrinkage in their income from endowments. These endowments, created in other days by gifts of generous benefactors to help pay the expenses of higher education, have been hit hard from two directions. During the war and post-war years, the tax collector took so large a part of the incomes and estates of wealthy people that this source of endowments has been greatly reduced. Over the same period price inflation cut in half the purchasing power of the income derived from existing endowments. In 1940 income from endowments provided 26 per cent of the total income of the independent colleges and universities. By 1950 it provided only 14 per cent. The figure is still lower today.

The financial plight of the independent colleges and universities is directly reflected in the salary status of their teaching staffs. In mid-1952 a national survey showed that, after adjustment for the increased cost of living, the salaries of those holding full professorial rank in these institutions were 12 per cent lower than they were in 1941-42. Junior teachers, with the rank of instructor, fared somewhat better. In terms of actual purchasing power, their salaries declined only 2 per cent over the 12-year period, largely because there is more direct competition for their services from industry. Over the same period, the real wages of industrial workers increased 55 per cent.

Time Will Not Provide a Cure

The plight of the colleges and universities, which is shared in some degree by all parts of our educational system, is not one that can be left to time for a cure. On the contrary, the financial problems of our institutions of higher learning will be intensified in the years ahead by the pressure of rapidly increasing enrollments. Present prospects indicate that during the next decade college and university enrollment will increase by about one-third, or from 2⅓ million to over 3 million. The problem of increased enrollments will become particularly acute toward the end of this decade when the babies born during the great surge of population in World War II are ready to enter college.

Such an increase in population as that now in prospect can be a tremendous asset to the nation. It is still a truth, even though it is worn a bit thin by frequent repetition at commencement exercises, that a nation has no resource more valuable than the education of its people. And the better the education, the more valuable the asset.

But to realize this, our colleges and universities must have the financial strength to handle the increased enrollments that face them in the years ahead. This means that we must relieve our independent colleges and universities, in particular, from the financial squeeze in which they are now caught and make them full partners in the economic well-being of the nation. Some of the means by which American business might help achieve this will be discussed in a second editorial.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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Donald C. McGraw

PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

How to reduce brake block cost-per-mile

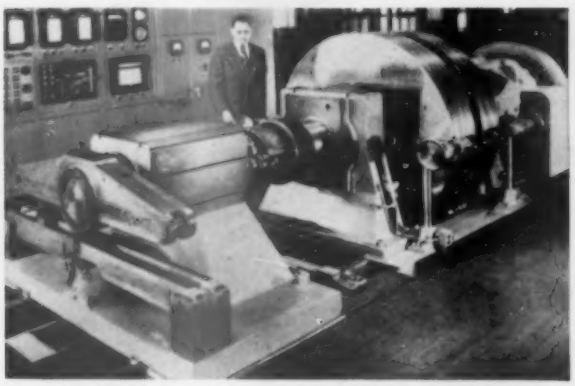
Ask yourself these questions — you may profit from the answers

"Can I actually get more uniform block performance?"

You can by using the right combination of Raybestos Brake Blocks. It will put the braking effort where it is needed to give you good deceleration, even wear, non-fading action, and long life.

"Can I get blocks that will really give me longer drum life?"

Yes. The right Raybestos Proving Ground Tested Blocks will protect drums against heat-checking and scoring. Ordinary or inferior blocks heat up drums, cause rapid wear and even failure.



"How much more can I expect from quality blocks?"

Exhaustive dynamometer and Proving Ground Tests prove that Raybestos blocks will also reduce the number of relines needed, the labor costs of relines, the labor costs of "too frequent" adjustments, and the costs involved in downtime and pull-ins.

"Can I make any other savings with Raybestos?"

Yes, your costs can be still further reduced by using Raybestos Ray-Lok and Ray-Metl Clutch Facings. And, if you have light and medium vehicles in your fleet, by using Raybestos PGT Truck Sets or Raybestos Lined Brake Shoes—either riveted or bonded.

To learn more about the savings Raybestos can give you, ask your Jobber Salesman about the unique Raybestos Fleet Engineering Plan

Raybestos®

GET IT FROM YOUR JOBBER

AMERICA'S BIGGEST SELLING BRAKE LINING

RM

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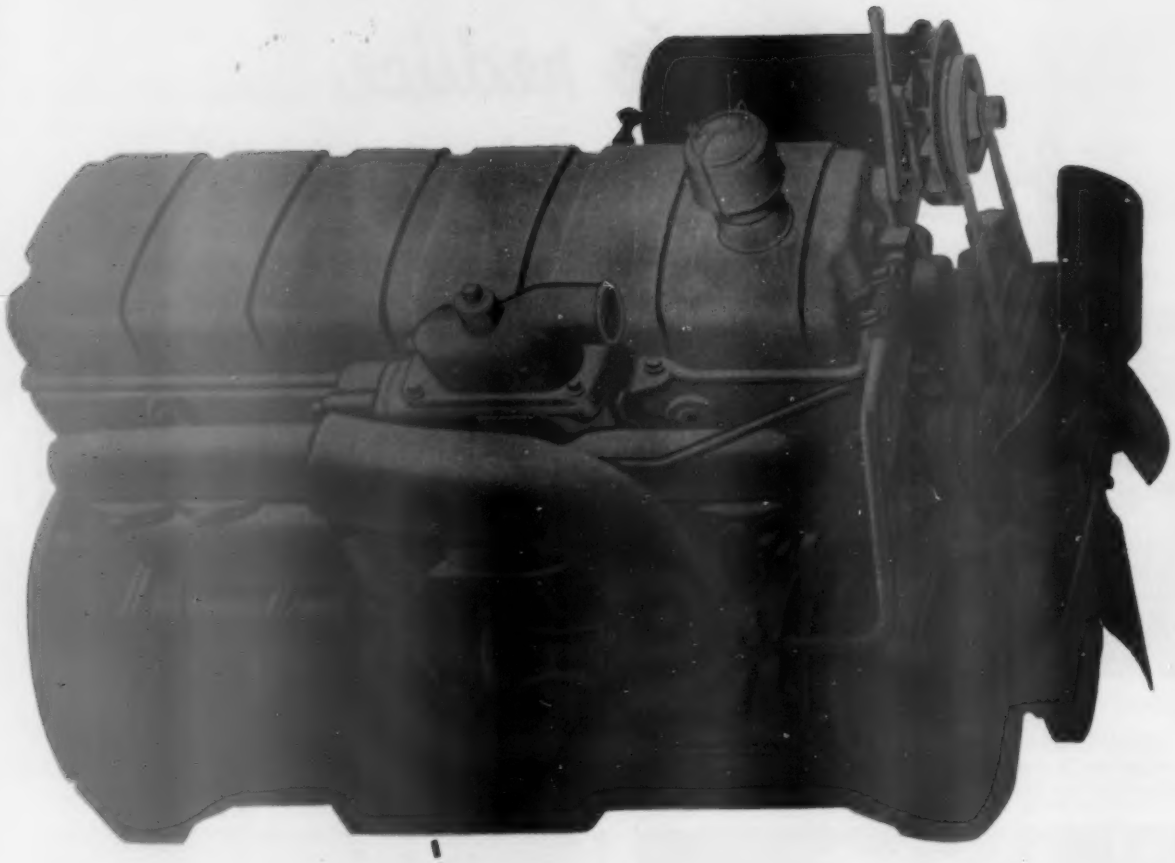
RAYBESTOS-MANHATTAN, INC., Brake Linings • Brake Blocks • Clutch Facings • Fan Belts • Radiator Hose • Industrial Rubber, Engineered Plastic, and Sintered Metal Products • Rubber Covered Equipment • Asbestos Textiles • Packings • Abrasive and Diamond Wheels • Bowling Balls



150 h.p. JBS 600 gives Cummins Diesel economy

CUMMINS **Cummins**

Engine Company, Inc. • Columbus, Indiana

Cummins newest diesel cuts fuel costs as much as 33%

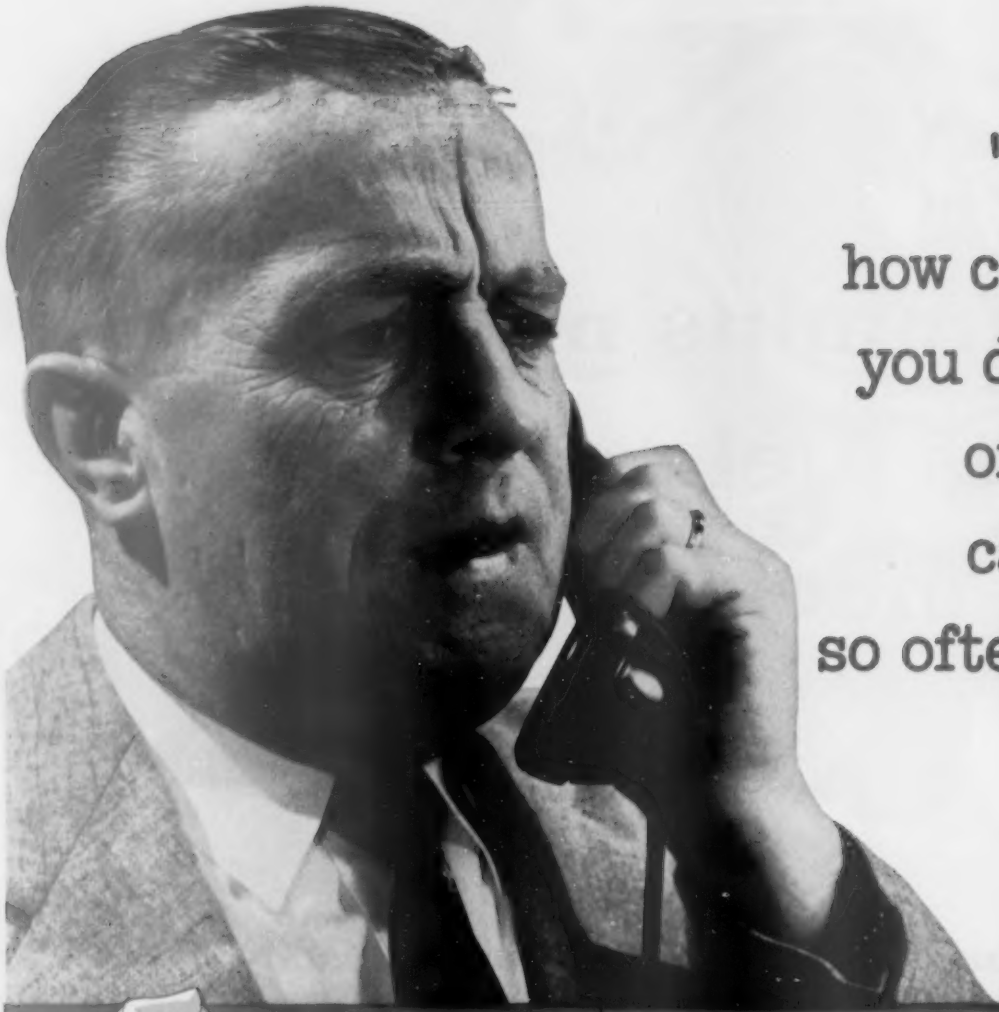
and performance to medium capacity buses

This diesel is engineered especially for medium capacity bus service. It features rugged 4-cycle design for long life and minimum maintenance costs.

It embodies all the features of the exclusive Cummins system of fuel metering and injection; is simple and easy to maintain. This system has made Cummins Diesels famous for greater efficiency under all operating and load conditions. Every gallon of fuel produces more mileage and the JBS-600 gives top performance on less expensive diesel fuel. *(No. 2)*

The Cummins JBS-600 Diesel is offered as standard or optional equipment by the leading truck and bus manufacturers. Their local representative or the Cummins dealer in your area will give you specifications.

Leader in rugged, lightweight, high-speed diesel engines [60-600 h.p.]



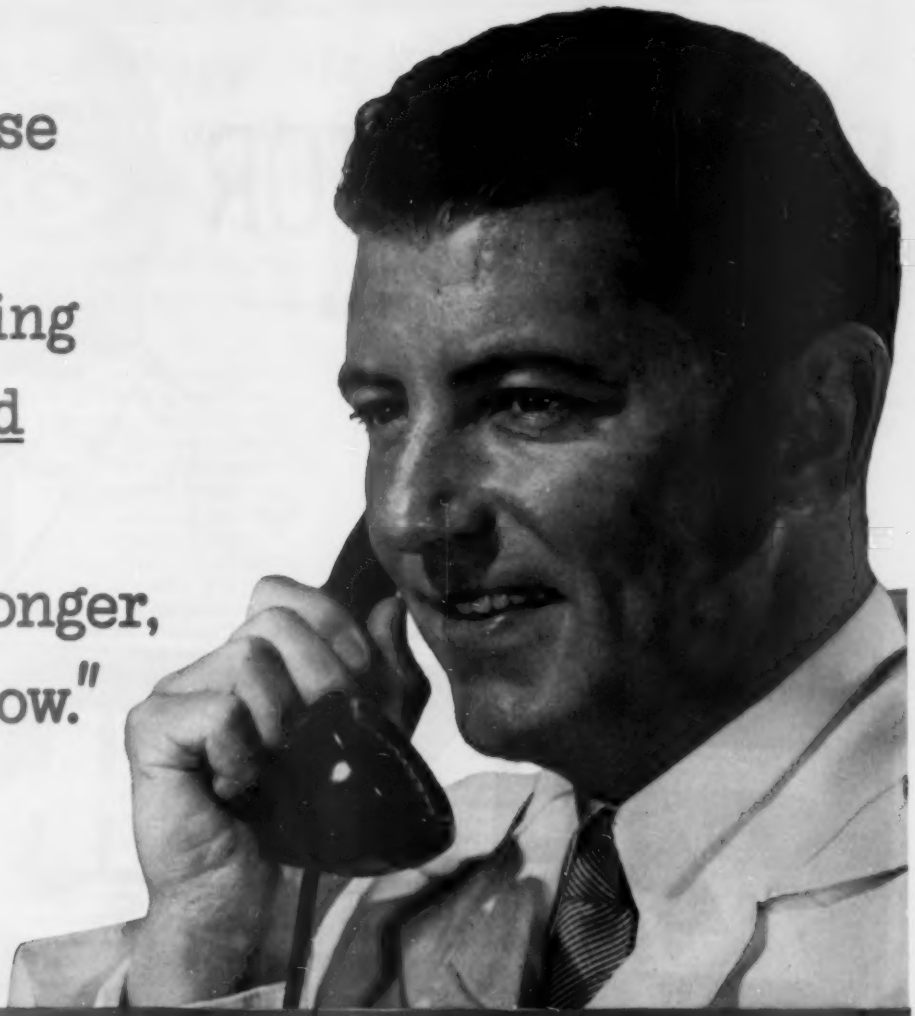
"Joe, how come you don't order cable so often?"

PACKARD BATTERY CABLE—*Packard battery cables are used as original equipment on more cars, trucks, buses and tractors than cables of any other make. Packard battery cables are full size, full weight . . . are available with* **LEADALLOY** *terminals or leaded brass terminals. Both types are packaged in individual cartons—both deliver top performance—both have acceptance, everywhere.*

Yes, you get *lower operating costs* **when you** standardize on Packard cable for your replacement needs. Packard cable is preferred by automotive engineers for starting, lighting and ignition—thanks to its dependability and long life . . . its extra resistance to heat, oil, chemicals and abrasion.

FOREMOST BUILDER OF AUTOMOTIVE WIRING

"Because we're now using Packard Cable... lasts longer, you know."



PACKARD IGNITION CABLE—*Long considered the standard of the automotive industry, Packard high-tension cable is original equipment on more cars, trucks, buses and tractors than any other cable. Packard* **FOUR-FORTY** *and Packard* **LAC-KARD** *ignition cables are designed to deliver balanced performance in every application. For dependability on the job, choose Packard!*

PACKARD LOW-TENSION CABLE—*As with Packard's two other products, Packard low-tension cable is used as original equipment on more cars, trucks, buses and tractors than cable of any other make. Packard's* **249 COMPOUND** *insulation, by every laboratory test and by the test of long, hard usage in the field, has exceptional resistance to heat, oil, chemicals and abrasion.*

Packard
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Packard Electric Division
General Motors Corporation
Warren, Ohio

A GENERAL MOTORS PRODUCT **A UNITED MOTORS LINE**

if the BUS OPERATOR built his own buses—

ZENITH CARBURETORS

would be *his* choice

They say it's a buyer's market. Well, the truth is, for the bus operator, it's always been a buyer's market.

No American businessman sets more exacting standards than the bus operator in his purchase of new equipment. There is good reason for this, for the operator's success or failure is to a very large degree determined by the efficiency of the vehicle he employs.

This yardstick of efficiency is likewise applied to every component part that contributes to bus performance.

That's why you can be certain if bus operators built their own buses, Zenith* would be the choice for standard equipment.

One more reason why—if you build, buy, sell or operate buses, Zenith should be *your* choice for the best in carburetion.

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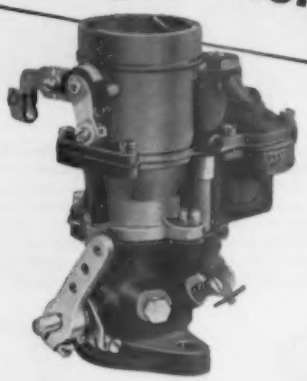


ZENITH CARBURETOR DIVISION OF Bendix AVIATION CORPORATION

696 Hart Avenue, Detroit 14, Michigan • **Export Sales: Bendix International Division, 205 East 42nd St., New York 17, N. Y.**

"Wagner Rotary Air Compressors ...give us plenty of air pressure for safe braking at all times"

says: **WILLIAM TESSIEN**, *Supt. of Maintenance*
Bluebird Coach Lines, Inc., Lyons, Illinois

Take the advice of superintendents of maintenance, like William Tessien, and standardize on Wagner Rotary Air Compressors. Year after year—mile after mile—the fact remains that Wagner Rotary Air Compressors are best for reducing costly shop repairs and for guaranteed safe-sure braking power to meet any road emergency.

Wagner Rotary Air Compressors maintain uniform torque load. Thousands of small overlapping air compression impulses occur each minute, to provide smooth, dependable operation and quiet performance. No more worry about carbon formation. Oil is separated and cooled *before* air is discharged from the Wagner Rotary Air Compressor.

Besides Wagner Rotary Air Compressors, it will pay you to check into the advantages of the components that make up Wagner Air Brake Systems—Wagner Brake Application Valves—for smooth, easy stopping; Wagner Relay Quick Release Valves—for eliminating large volumes of air through long air lines; and Wagner Quick Release Valves—for faster brake release . . . permitting reliable safety throughout the braking range from slow to emergency deceleration.

Prove for yourself the tested, profitable dependability of Wagner Rotary Air Compressors and Wagner Air Brake Systems—complete details are given in Wagner Bulletin KU-201. Send for your free copy, today.

BLUEBIRD SYSTEM, INC.
BLUEBIRD COACH LINES, INC.

Wagner Electric Corporation
6400 Plymouth Avenue
St. Louis 14, Mo.

Gentlemen:

Courtesy and safety for our passengers is of major importance to us at Bluebird Coach Lines. It is a policy that underlines every service we perform. It has meant, over the years, that we have been able to better serve the people in and around Chicago and Joliet.

To live up to this service motto, I make absolutely sure every piece of equipment used - every part installed - is safe, dependable, and economical to operate. I have found from experience that Wagner Rotary Air Compressors more than meet our safety standards. They are easy to install, are quiet, and give us plenty of air pressure for safe braking at all times. On those Bluebird Coaches equipped with Wagner Rotary Air Compressors, brake compressor maintenance costs have been almost eliminated.

For these reasons Bluebird Coach Lines, Inc., is continuing to specify Wagner Rotary Air Compressors when ordering new buses.

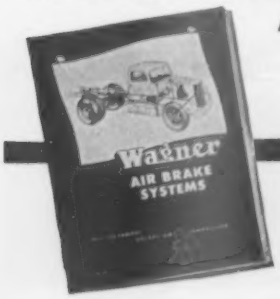
Sincerely,
Wm Tessien

William Tessien
Supt. of Maintenance

When ordering new equipment, be sure to specify Wagner Air Brakes

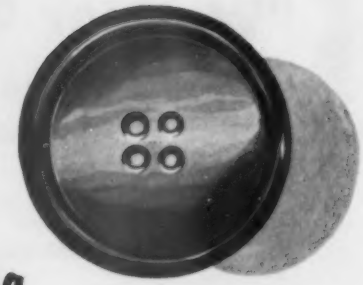
K54-5

Wagner Air Brake Users Are Our Biggest Boosters



Wagner Electric Corporation
6461 PLYMOUTH AVENUE, ST. LOUIS 14, MO., U. S. A.
(Branches in principal cities in U. S. and in Canada)

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID...HeRoL...
CoMaX BRAKE LINING...AIR BRAKES...TACHOGRAPHS...
ELECTRIC MOTORS...TRANSFORMERS...INDUSTRIAL BRAKES

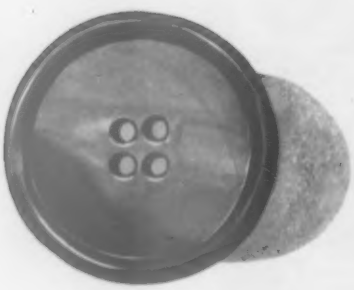


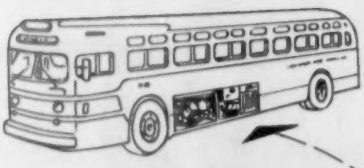
We're Busting our Buttons . . .

The years 1943 to 1953 offered Tropic-Aire—Carrier a decade of experience in serving the motor coach industry with road-proven air conditioning equipment.

During 1953, more Tropic-Aire—Carrier air conditioners were installed in new motor coaches than *any other make in the world.*

In 1954 more motor coach operators will specify Tropic-Aire—Carrier air conditioners than *all other makes combined.*



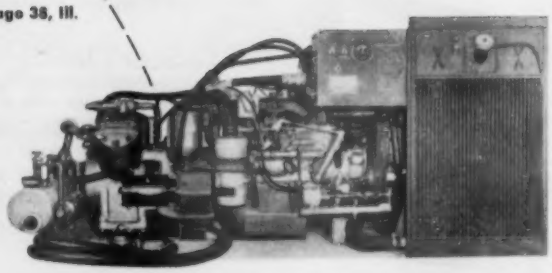


Carrier

TROPIC-AIRE INC., 5201 W. 65th Street • Chicago 38, Ill.

TROPIC-AIRE, INC. IS A SUBSIDIARY OF McGRAW ELECTRIC CO., CHICAGO

Catalog upon request



Save Money 3 ways... with

GUNITE DRUMS

1 — Longer life of brake drums.
2 — Longer life of brake linings.
3 — Reduced down-time and brake maintenance.

Gunite Brake Drums offer you more miles of safe, sure stops. Heavy ribbed Gunites counteract fading under severe intercity service where a quick smooth stop from highway speed is a frequent necessity. Gunite ribbed design minimizes flexing, dissipates heat faster, resists heat checking and wear due to constant stop-start, stop-start of city bus operation. Gunite Brake Drums are stronger, safer, surer, longer lasting. Specify Gunite Brake Drums for replacement.

"FOR SAFETY . . . INSIST ON GUNITE DRUMS!"

GUNITE

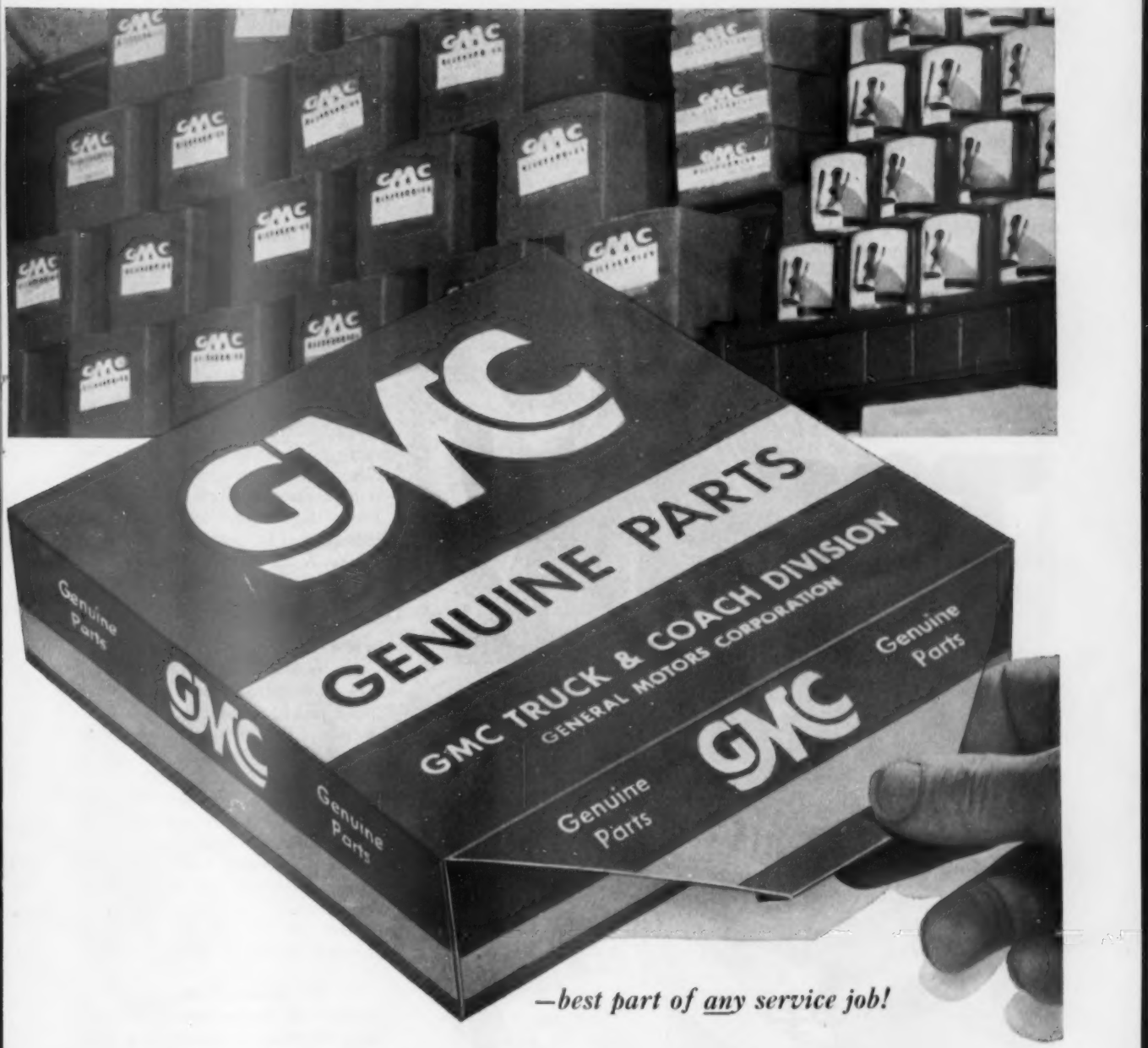
GUNITE FOUNDRIES CORPORATION · Rockford, Illinois

Widen your margin of safety with parts by GMC!

Ask any veteran driver. He'll tell you how much it means to have brakes that stop a few feet shorter – or steering that responds a split-second sooner. That's his entire margin of safety in a tight spot.

And that's why replacement parts come in for such special attention here at GMC. They must equal the super-quality you had when your GM Coach was new. And they do. For they come off the same factory lines as the parts going into the great 1954 GM's.

Every GMC brake lining is torture-tested for the ability to make hundreds of smooth, sure stops a day. Steering linkages must *prove* they will operate smoothly despite incessant strains. Every part *earns* its right to bear the "Genuine GMC Part" label—and that mark is your guarantee of quality.



—best part of <u>any</u> service job!

So there's never need to gamble in any GM Coach repair. The odds are far too high – when lives and liability are the stakes.

That's why so many coach operators play it safe by making their nearest GMC Parts Warehouse their exclusive source. They know GMC quality leaves nothing to chance. And good coach safety records are no accident!

GM
GENERAL MOTORS
COACH

GMC Truck & Coach Division of General Motors

Be careful—drive safely

The Consulting Department . . .

Continued from page 41

Lubrication • "Our method of lubricating brake cam and anchor pin is with a small oil cup on end of pin. A drop or two of oil at each lubrication interval is ample. Another method which has proven satisfactory is to spray the pin and inside of brake shoe housing with D.G.F. This eliminates need for continuous lubrication.

Brake Squeal • "Find the proper coefficient of friction of lining to suit your particular equipment and locality. This is the only suggestion we offer to curb brake squeal."

Eastern Massachusetts St. Ry. Co. has this to say about . . .

Mileage • "Information compiled from records of ten vehicles selected at random from our fleet of 40 passenger coaches equipped with torque converters — average miles operated per coach to date 361,000 miles.

Front Brake Lining	Average Miles..	47,000
Rear Brake Lining	Average Miles..	38,000
Brake Drums-Front	Average Miles..	235,000
Brake Drums-Rear	Average Miles..	137,000

Brake Drums • "Normalized brake drums are now being tested. No conclusive results can be determined as yet. We have not tested Copperweld brake drums.

Lubrication • "Experiments are now being conducted using various types of lubricants on the brake cam roller pin and the internal brake cam roller bearing surface. The outer cam roller bearing surface where roller contacts the brake cams is not being lubricated, tests seem to indicate that lubrication at this point results in the cam roller sliding on the cam instead of rolling. This results in excessive cam roller wear.

Brake Squeal • "Our experience with tests using brake linings of varying frictional characteristics have shown that brake linings with low coefficient of friction have a tendency to reduce brake squeal.

Equalization • "We are now conducting tests in conjunction with brake lining and brake drum manufacturers to equalize brake lining life between front and rear brake lining. Combinations using two different coefficient of friction linings have proven a step in the right direction."

V. E. Zimmerman, superintendent of maintenance, Harrisburg Railway Company, has this to say about . . .

Mileage • "We average 44,000 miles on brake lining. This is the average for the front and rear brake lining. The average mileage on brake drums for both front and rear is 190,000 miles.

Brake Drums • "We have coaches equipped with 'normalized' brake drums that have operated 142,319 miles to date. They have been replaced and just how much more mileage we may get on them remains to be seen. We have not had any expe-

Continued on page 104

Specially designed for your kind of service, Tung-Sol Truck Lamps help keep you out of trouble on the road—minimize your lamp bill. Distributors all over the country carry the complete line of Tung-Sol Truck Lamps. There's one near you. Write for his name. If you have a chronic lamp problem, write to:

Tung-Sol Electric Inc., Newark 4, N. J.

Sales Offices: Atlanta, Chicago, Columbus, Culver City (Los Angeles), Dallas, Denver, Detroit, Newark, Philadelphia, Seattle.

"Only CHAMPION with its Sillment* Seal met the test of near 10:1 compression in our changeover to propane"

Says—Harry F. Folk
General Manager
METROPOLITAN LINES INC.

PHONE 82343

Metropolitan Lines inc.

• OFFICES WATKINS RD. AT THIRD AVE.

• P. O. BOX 4275 • PHOENIX, ARIZONA

January 15, 1954

Champion Spark Plug Company
Toledo, Ohio

Gentlemen:

Some time ago when we started changing our fleet of Fageol Twin-Coaches over to propane fuel using compression ratios of nearly 10 to 1, spark plugs presented quite a problem. In some instances, the heat and compression tended to loosen the insulator in the plug itself.

After testing several brands of spark plugs, we found that Champion Spark Plugs gave us the performance and service necessary for economical and efficient operation of our fleet of busses covering Phoenix and the "Valley of the Sun".

Since we have standardized on the use of Champions in our fleet, spark plugs no longer present a service problem.

Yours very truly,

METROPOLITAN LINES INC.

Harry F. Folk

Harry F. Folk, General Manager

HFF:fs

SILLMENT SEAL

*CHAMPION'S EXCLUSIVE SILLMENT SEAL

Sillment powder, a patented product of Champion research, is packed into each spark plug at 18 tons pressure PSI. The Sillment expands and contracts at the same rate as the insulator and plug shell to maintain a perfect seal at all operating compressions and temperatures.

Mr. Walter Peterman
Supt. of Maintenance

NEW Precision made parts are necessary to restore worn shock absorbers to guaranteed dependable performance.

Practical economy-wise maintenance men are taking advantage of our fast reliable service.

All new parts are manufactured by us to obtain the high standards we employ in remanufacturing your shock absorbers. Precision assembling assures dependable performance. We are completely equipped and qualified by experience to render the prompt service you need. Send your worn shocks to us and save dollars.

National Transport Supply, Inc.

SHOCK ABSORBER, STARTER DRIVE AND WATER PUMP SERVICE

OFFICE AND PLANT

545 E. Hancock Detroit 1, Mich.

The Consulting Department . . .

Continued from page 102

rience with the Copperweld brake drums to date.

Lubrication • "We do not use any lubrication on our brake cam rollers but we do use a No. 630 AH lubriplate grease on the brake anchor pins when the coach is brought into the shop for a brake job.

Brake Squeal • "The brake lining story is quite a lengthy one. We experimented all over the lot with a number of makes and mixes. However, in our operation, we think that the best results are obtained by using a very low friction on the primary shoes and a high friction on the secondary shoes. By this, I mean there is less noise, a minimum amount of fading and not too severe a brake.

Equalization • "We average approximately two sets of rear lining to one set of front lining. However, when we do a complete brake job, that is, when both the front and rear is relined, we balance the brakes, replace all pull back springs and diaphragms, and rebush all working parts."

Claude R. Sawyer, superintendent of maintenance, Portsmouth Transit Company, has this to say about . . .

Mileage • "The average brake lining mileage for our buses for the front is 111,658 and for rear linings, 58,000 miles. We feel that lining life would be prolonged to great extent if we did not have to operate through high tidal waters, which flood our city streets about four times a year.

Brake Drums • "The brake drum life for front is 310,232 miles and for the rear 155,116 miles. We have no experience with "normalized" or copperweld drums.

Equalization • "We have tried in several ways to equalize the life of the front and rear brake lining, even reducing the air lines from one half to three eights of an inch. That did not help matters, as we soon found that the rear brake lining life was shortened by this. We now have a standard practice of having equalized brake springs, air pressures, and slack adjuster equalization, that has helped us with our lining life."

Lubrication • "All lubrication to brake cam rollers and anchor pins has been assigned to the 6,000 mile inspection, with specific instructions for proper lubrication. Therefore we have very little trouble with grease getting on our brake lining.

L. P. Reilly, superintendent of equipment, Chicago & West Towns Railways, Inc., Oak Park, Ill., has this to say about . . .

Mileage • "We average 71,500 miles on our front brake shoes and 51,000 on the rears. On brake drums we average 240,000 miles on the front and 175,000 miles on the rear.

Brake Drums • "We have had no experience with the Copperweld brake drums.

Lubrication • "Brake cams, rollers and pins are lubricated only at the time of installation.

Brake Squeal • "We have tried using a different coefficient brake lining and it was not very successful.

Equalization • "We also tried this on the front brakes to try to equalize the wear, but lost mileage."

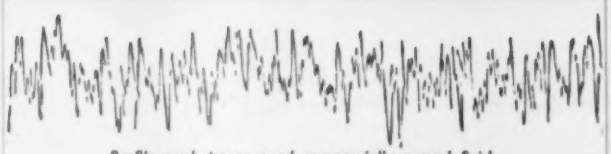
A. K. Litchfield, chief sales engineer, Raybestos Division of Raybestos-Manhattan, Inc., has this to say about . . .

Mileage • "Listed below are a range of mileage figures sent to us by some of the leading fleets in the country. Ranges are given because of the different operating conditions on the properties providing the data. All figures given are for a rear axle with standard drums.

GMC TDH-4509—Brake Lining 40-50,000 miles; Drums 140-150,000 miles, *GMC TDH-3610*—Brake Lining 38-48,000 miles; Drum life figures not available, *Mack C41G*—Brake Lining 44-60,000 miles; Drums 140-150,000 miles, *Mack C45*—Brake Lining 40-50,000 miles, *ACF C44*—

Continued on page 108

We put a tape measure to a millionth of an inch



Profilograph trace, good commercially ground finish Magnified 5,000 times, vertical, 30 times horizontal.

Profilograph trace, TIMKEN bearing finish Magnified 5,000 times, vertical, 30 times horizontal.

(Another reason why TIMKEN® bearings are first choice with bus manufacturers)

WE developed the granddaddy of this interesting looking machine back in 1928. And we've been constantly improving it ever since. It's a profilograph. It checks contours and smoothness of circular surfaces to within one millionth of an inch and records them on a graph like the one shown below the instrument. It has helped the Timken Company to develop the grinding techniques and machines responsible for the microscopic surface finish that helps make today's Timken® tapered roller bearings so accurate—and first choice with bus manufacturers.

The Timken Company is the acknowledged leader in: 1) advanced design, 2) precision manufacture, 3) rigid quality control. And we're the only bearing company that controls quality every step of the way, because we're the only company in the United States that makes its own steel. When you install a new tapered roller bearing, always make sure it's stamped with the trademark "Timken". Send now, on your company letterhead, for your free copy of "Timken Tapered Roller Bearings, Their Care and Maintenance". Dept. TB-5, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

SINCE THEY'RE BEST WHEN THE BUS IS NEW, THEY'RE BEST FOR REPLACEMENT, TOO!

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▱ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION →◫←

"Gulflube Motor Oil H.D. reduced our maintenance costs 15%!"

Jack A. Murdie (right) superintendent of equipment, Central New York Coach Lines, shows his maintenance record to A. W. Meister, Gulf sales engineer. Mr. Murdie says that Gulflube Motor Oil H.D. has reduced maintenance costs 15%.

STILL another fine report on the excellent performance of Gulflube Motor Oil H.D.! This time it's from Mr. Jack A. Murdie, superintendent of equipment, Central New York Coach Lines, Inc. at Utica, New York.

This line operates 27 Diesel units and 8 gas units. All coaches use Gulflube Motor Oil H.D. Engines have a complete overhaul on an average of 300,000 miles and one engine was in service 384,000 miles before overhaul!

Improve oil mileage!

We think it would be wise for you, too, to use this outstanding motor oil and improve mileage and reduce maintenance costs on your equipment.

Gulflube Motor Oil H.D. is a superior heavy-duty type oil that not only provides the best possible lubrication, but keeps engines clean. It has a rich paraffin base that provides a strong oil film—excellent for city bus service.

Get all the facts on Gulflube Motor Oil H.D. by contacting your nearest Gulf Office today. A Gulf sales engineer will be glad to call on you and explain how you can get improved mileage, reduced maintenance costs, and higher fleet availability.

Gulf Oil Corporation
Gulf Refining Company

GULF

UTICA
25

TORQUE CONVERTER PROBLEMS?

see TRANS-MAIN for a quick, economical solution!

TRANS-MAIN's skilled craftsmen will cure your torque converter headaches—for once and for always!

TRANS-MAIN handles every type of repair and reconditioning work on transmissions, propane carburetion equipment, gasoline and propane engines—as well as torque converters.

TRANS-MAIN performs individual jobs in less time—at lower cost than transit company garages or manufacturers' general service departments . . . often is able to efficiently rehabilitate equipment previously labeled "beyond repair".

For full details, write, wire, phone TRANS-MAIN Corporation, Kent, Ohio. A-5057

"Lapping" of torque converter bellows seals . . . a typical TRANS-MAIN service operation.

Ask for copies of "Transit Maintenance Topics," a service bulletin containing the latest transit maintenance news.

TRANS-MAIN CORPORATION
KENT, OHIO
Kent, Ohio
TRANS-MAIN
CORPORATION

The Consulting Department . . .

Continued from page 104

Brake Lining 40-55,000 miles, *Twin Coach 41S*—Brake Lining 40-45,000 miles.

Brake Drums • "The design of the "Copperweld" drum allows rapid dissipation of heat from the brake surface, and increases brake block life.

Lubrication • "It is best to lubricate brake cam rollers and anchor pins at each reline with a lubricant such as lubriplate and avoid excessive greasing during operation between relines.

Brake Squeal • "We do not feel that changing to a block with a different coefficient of friction will necessarily reduce brake squeal. It has been proven many times, however, in actual use that the correct combination friction set of brake blocks will reduce or entirely eliminate squeal. This is true because the working pressures of the two shoes are more nearly equalized, reducing drum distortion and vibration.

Equalization • "Combination friction sets of brake blocks also equalize the work done by each shoe which, in terms of heat, means better distribution. Also, the drum contacts surfaces of more nearly equal temperature, which reduces drum fatigue — the source of heat checks.

"A vehicle is designed with a certain distribution of brake effort front and rear, and we believe that to upset this relationship is unwise. This is particularly true in the northern section of the country where front brake can be dangerous in winter."

C. O. Sparhawk, vice president, The United Transit Company, has this to say about . . .

Mileage • "Due to conversion of a large number of vehicles and the purchase of new equipment, we are unable to quote brake drum and lining life except on our White 798's. During the year 1953 the vehicles operated 58,000 miles per set of brake lining and 64,000 miles per drum (rear brakes only).

Brake Drums • "UTC does not use Copperweld brake drums. "Normalized" brake drums are used on the 44D Twin Coaches and we believe they are used on the new General Motors 50-passenger diesel equipment. We are about to start a test using the normalized treatment.

Lubrication • "There is no way to properly lubricate brake cam rollers and anchor pins. This lack of facility has been sadly lacking all through the years and causes a very great deal of brake trouble which otherwise could be eliminated.

Brake Squeal • "When we have experienced a problem of brake squealing on this property in our different makes of equipment which has not been entirely corrected by the use of the medium and low combination brake blocks manufactured by the Johns-Manville Company.

Equalization • "We have not experimented with brake pressures between front and rear axles. We assume that, for the most part, modern buses are properly engineered to provide proper and safe braking. We do wish, however, that a better method of balancing were available between wheels on a given axle."

Karl M. Kendall, superintendent of equipment, San Antonio Transit Co., has this to say about . . .

Mileage • "From brake lining we are averaging 55,680 miles; from brake drums, 302,967 miles.

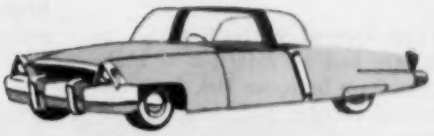
Brake Drums • "Our experience with "Normalized" brake drums has been very satisfactory, and we always specify Normalized drums. We have had no experience with Copperweld brake drums.

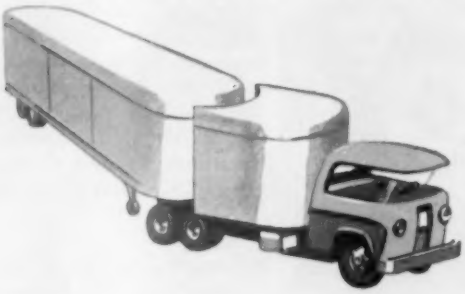
Lubrication • "We attempt to control excess lubrication of brake cam rollers and anchor pins by emphasizing its importance to inspectors. However, it continues to be an occasional problem. We have one test under way of a graphite-asbestos composition bushing on brake shoes, and it is our understanding that similar nonlubricated bushings will be available

Continued on page 110

Today...

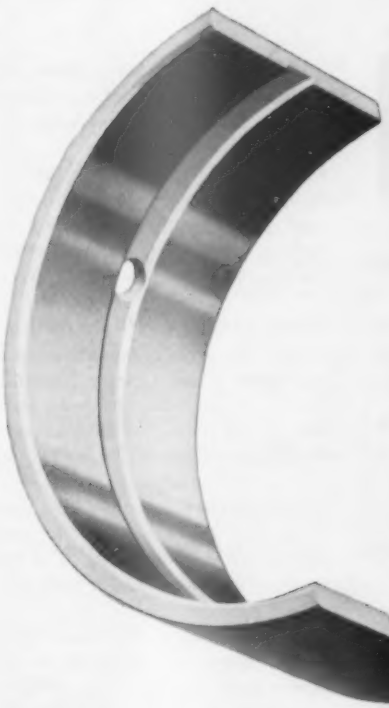
a new type of bearing





lengthens bearing life,

reduces maintenance cost



MORAINE-400

The tough problem of engine bearings has been solved with Moraine-400—toughest automotive engine bearing ever made! Think of what this means to truck owners in terms of *less* time and expense for bearing maintenance . . . *more* time on the road.

Moraine-400 is made from aluminum-base alloy—developed by General Motors-Moraine research over a ten-year period—that is bonded to a steel back. When Moraine-400 is used bearing *length* can be reduced, crankshafts can be strengthened to handle greater piston loads, and engine builders can pack more horsepower into engines without increasing engine size!

Many new automotive and off-the-road engines—both gasoline and Diesel—that deliver greater power per bearing length are being equipped with Moraine-400 bearings.

Note: Moraine also makes the famous Moraine-100 bearings—original equipment on many of the nation's finest cars and trucks.

m

moraine products

DIVISION OF GENERAL MOTORS CORPORATION, DAYTON, OHIO

The Consulting Department . . .

Continued from page 108

for cam shafts at a later date. Material for our limited test now underway was furnished by Greyrock.

Brake Squeal • "Such results as we have had on reduction of brake squeal have been, we feel, from mechanical changes and closer maintenance rather than from frictional changes or change of manufacturer.

Equalization • "The ratio of lining wear front to rear is in fair balance on our modern buses, which operate more than 80% of our mileage. We have done little experimenting on our older buses and the ratio of wear on these is approximately 2 to 1."

Alden H. Williams, assistant general manager, The Connecticut Company, New Haven, Conn., has this to say about . . .

Mileage • "Average mileage for reline on front brakes is 83,900 and for rear brakes, 46,200. As nearly as we can estimate, approximately 160,000 is obtained from brake drums.

Brake Drums • "We have no experience either with Copperweld or with Normalized drums.

Lubrication • "Brake cam rollers are lubricated when brakes are relined. Water-resistant graphite is used, Anchor pins are lubricated every 3,000 miles with regular chassis lubricant, taking precaution that pins are not over-lubricated.

Equalization • "Front blocks are replaced at every other relining of rear brakes."

H. G. Wheeler, superintendent of automotive equipment, Pittsburgh Railways Company, has this to say about . . .

Mileage • "We get about one-third more mileage out of front brake linings than out of the rear linings, namely 90,000 miles for front and 60,000 for rear.

Lubrication • "Brake anchor pins can be lubricated by grease fitting but the mechanic who does this work must be instructed carefully as to the amount of grease to use—"sparingly" is the word.

Brake Squeal • "Practically all brake squeal has been eliminated by changing the friction coefficient of the lining to get satisfactory mileage and at same time, quiet operation."

J. N. Herring, superintendent, Savannah Transit Company, Savannah, Ga., has this to say about . . .

Mileage • "Currently we average 31,000 miles on rear brake lining and 63,000 on front lining.

Brake Drums • "Brake drum life is 90,000 miles on rear wheels and 242,000 miles on front.

Lubrication • "Despite use of high pressure greasing equipment we have no trouble with grease leaking onto brakes."

H. J. Bars, asst. mgr., The Bristol Traction Co., Bristol, Conn., has this to say about . . .

Mileage • "Current life of brake lining on Bristol vehicles is 62,502 for rear brakes and 112,774 for front brakes. Mileage on drums is 200,000 for rear and 300,000 for front.

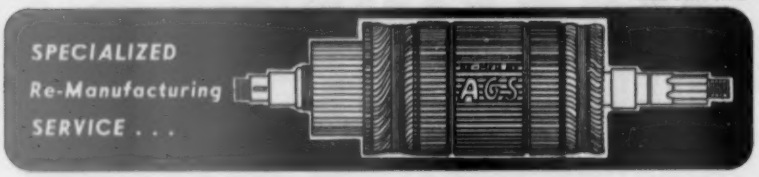
Brake Drums • "The original brake drums are still in operation on our ten newest Transit Buses. Normalized drums are used on these vehicles and the results speak for themselves. No experience as yet with Copperweld.

Lubrication • "Anchor pins can be lubricated properly without getting the grease on the lining if a hand-pump is used with heavy gear oil.

Brake Squeal • "We have reduced brake squeal by changing to Raybestos brake lining.

Equalization • "We are unable to equalize life between front and rear linings mainly because rear brakes have larger cylinder diaphragms than front brakes."

REBUILDING



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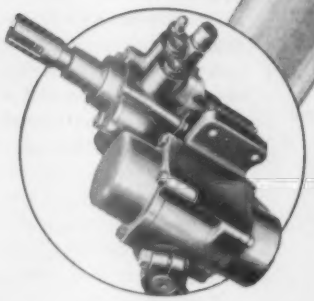


Genuine Superiority!
Greater Safety!
Greater Savings!

Why does G S mean so much to you? Simply because: G S means Gemmer Steering. It means that here is a product backed by nearly 50 years of manufacturing skill . . . a product which represents countless hours of painstaking research and development . . . the peak achievement of a concern devoted exclusively to the manufacturing of steering gears. G S means Genuine Superiority. A superiority which only time and experience can secure. Gemmer has always led the way . . . Gemmer Pioneered Power Steering! G S means Greater Safety. Gemmer Hydraguide full-time power steering works for you all the time. It removes the *you-power* from steering, makes driver control easy in case of front wheel obstruction, soft shoulder or blow-out. And G S means Greater Savings. Over 80% of the actual work is done by the Gemmer unit, resulting in less fatigue and fewer accidents resulting from fatigue. Get Gemmer full time Hydraguide power steering for trucks, automobiles, boats, farm and material handling equipment. Get Gemmer Steering for Genuine Superiority, Greater Safety, Greater Savings.

Pioneers in Power Steering

Gemmer Manufacturing Company, Detroit 11, Michigan

ATA Meeting in Detroit . . .

Continued from page 60

continuing operation . . . that only through continual analysis and careful revision, could top efficiency be obtained.

He cited a number of improvements being made by DSR, among them the adoption of two-post hoists instead of pits in several garages. The hoists will be used for inspection and repairs . . . will have ten-reel hoses to supply greases, water, oil, air and anti-freeze.

W. E. Williamson of St. Louis Public Service Co. presented a paper on "More Life for Your Engines."

In another paper, "Wheel Balancing and More Miles from Tires," Gustav E. Heiber of Boston, Worcester and New York Street Railway Co., Framingham, Mass., said that the main causes of short tire life were over- and under-inflation. He also blamed high speed, overloading, neglected cuts and mechanical defects, but claimed that 40 per cent over- or under-inflation could cut tire life in half.

High speeds which create heat up to 300 deg, thus reducing resistance to abrasion, can also cut tire life in half.

Heiber is sold on wheel balancing for over-the-road operations. Discussion showed that many maintenance men backed him up . . . also felt balancing might be beneficial for high-speed operations . . . wasn't necessary in slow-speed runs.

"How We Salvage Materials," was the title of a paper presented by James Pitler of the Cleveland Transit System.

The afternoon mechanical meeting was conducted on an informal round-table basis with Carl A. Koch of CTS as chairman. This session was given over to the problems of trolley-coach maintenance.

A discussion was held on the time it takes to do a complete inside and out paint job. Figures cited indicated a range from more than 125 to less than 50 man hours. The fastest paint job is being done by Cleveland which uses a traveling DeVilbiss spray booth and completes the job in 46 hours.

E. L. Mueller of General Electric, presented a paper on "Dollars Per Vehicle Mile Vs. Cents Per Vehicle Mile."

How to save money was the basis of the second day's maintenance meetings, consisting of a panel and an informal discussion.

Kicking off the talks was E. C. Krueger of Indianapolis Railways who suggested operators may be taking a beating because they're using worthless maintenance records.

As an example, he pointed to the practice of removing differentials for inspection at 150,000 miles only to find there's nothing wrong. By greater spacing between these inspections and similar ones, time and money could be saved, Krueger maintained.

Warming to the subject, Krueger also presented transit with a goal: 20 man hours of labor per 1,000 miles of vehicle operation. He's confident it will be achieved . . . feels it must be for operators to stay in business.

Another example of what can be done to save money was advanced by T. A. Smith of Louisville Transit. His ideas: Time-saving devices and greater care on the part of mechanics.

Louisville's Buck's Cyclone Cleaner saved the company $9,000 in its first year of operation, Smith said, while better front end and brake maintenance has increased tire life 10,000 miles per unit. The increase amounted to a $19,000 saving last year.

To back up his argument, Smith pointed to a $154,000 saving in 1953 over 1952 although buses operated just as many miles.

Smith is also a firm believer in chrome plating parts for longer life. Chrome-plated spindle pins inspected after 75,000 miles of operation were found unscratched . . . impossible, he says, even with new unchromed pins.

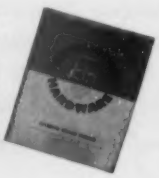
By matching diesel injectors and installing a test fixture, then changing the shift pattern to improve engine mileage, Wallace Henry was able to save Memphis Street Railway $6,800 in fuel costs last year, he told the maintenance men.

Henry found a 14 to 21-mile-per-

ATTWOOD—*built hardware lasts miles longer*

Turn your bus hardware specifications into beautiful, durable finished products by sending them to ATTWOOD. Behind every piece of ATTWOOD Bus Hardware is the skill and knowledge of fifty years experience in custom fabricating field. And too, ATTWOOD gives you a selection of over two thousand standard designs.

Write for your copy of the New Attwood Automotive Hardware Catalog No. 25. There's no obligation of course.



"Four out of five leading bus manufacturers specify ATTWOOD hardware and trim."

ATTWOOD BRASS WORKS
GRAND RAPIDS 4 MICHIGAN

Write to Corner Douglas and Scribner Avenues, Grand Rapids 4, Michigan

hour pattern gave improved operation as opposed to the 16 to 24-mile-per-hour productions specifications. He suggested that operators conduct their own tests to find which pattern might be best for them.

Walter Davis of Cleveland Transit boosted "Clinical Inspection of Buses" and pointed out the uselessness of short period adjustments. As an example of the latter, he told of 40 diesel coaches inspected after clocking 3,000 miles each. Some had had rack adjustments, others hadn't been touched. It was impossible to tell the difference between the two, he said.

Two tools Davis uses in clinical inspections are a stethoscope and a Pyrocon. The stethoscope is used to determine valve lash without removing the rocker cover. With it, it's possible to tell a variation of 0.002 inches.

By using a Pyrocon to measure heat at various points, it's possible to eliminate overheating without disassembly. Davis uses this device to test the radiator, thermostat and to tell at what temperature the thermostat opens.

At the one-day management session chairman Paul Dittmar led discussions on "Transit Pars."

Dittmar listed successful users of Transit Pars . . . companies showing a profit.

In a continuing fight to obtain tax relief in Congress, Harley Swift of Harrisburg Railways, former ATA president, urged individual members to support the Association. He called letters and telegrams useless . . . suggested that every ATA member make a personal contact with his Congressman.

Progress with traffic problems was reported by W. Harris of Indianapolis Railways. The latest idea there to speed traffic and move more people faster is express trolley bus service. Trolley buses use an extra set of wires strung over the middle of the road. (See March BT, p. 38.)

By using existing cross-wires and poles, IR was able to save on major construction costs.

Harris also pointed to some of the other strides being made in his city. They include elimination of left turns on main streets and widening of one-way streets where needed. Both have helped IR to reduce travel time.

Here Are Three Ways This NEW Oakite SOLVENT-DETERGENT

Will Save Money In Your Shop

SAVES MONEY ON COLD TANK CLEANING:

Specially designed for cold tank cleaning, Oakite Composition No. 8 does a faster, more thorough job. Oakite Composition No. 8 is highly recommended for cleaning heavily-greased automotive parts before repair or overhaul. Long lasting solutions insure substantial savings.

SAVES MONEY SPRAY-CLEANING:

Even your worst muck-encrusted chassis, motor parts, etc. yield quickly to the effective detergent action of Oakite Composition No. 8. Dilute with kerosene distillate for economy.

SAVES MONEY ON ODD-JOB CLEANING:

Oakite Composition No. 8 is a real money saver when diluted with water for odd-job cleaning around shops and pits. Eliminates fire hazard, too.

SPEEDS CLEANING JOBS—NO ODOR NUISANCE
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This safe solvent detergent, Oakite Composition No. 8, can be used in cold solution for removing even the heaviest oil and grease from automotive parts and equipment. You'll find it faster, safer, more pleasant to use—on a wide range of garage and service shop cleaning jobs.

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Battery Terminals
Here's a new, advanced-design, heavy-duty battery terminal that will save you time, effort and money. Special bronze alloy (95% copper). Will not "freeze" to battery post. In both DIX-X "SWEA-T-TYPE" and DIX-R "SOD-R-LESS" types. DIX-X will take up to 000 Cable when "sweated" in. Competitively priced. Write today for all the facts.
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PROTECT REVENUE
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Ideal for multi-fare and fractional fare systems. Attract riders. Speed fare handling. Eliminate change-making delays. Assure accurate sorting, counting and wrapping by maintenance of identical size. An investment . . . not an expense, for they wear indefinitely.
* Allocated . . . an exclusive M & W method of manufacturing metal fare tokens individually designed for each customer. Perforations and lettering are in the same relative aligned position on every token which makes them identical, thus protecting against duplication. This is especially important with no Federal law protection.
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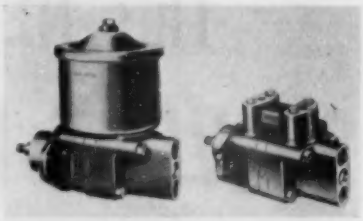
WHAT'S NEW

Continued from page 44



Two new pump series . . .

. . . for hydraulic power steering are now in general production. Series VT16 consists of a vane type hydraulic pump, flow control and overload relief valves and integral oil reservoir. It is designed for use with a hydraulic steering booster to form a complete power steering system with simple installation.

The unit need only be bolted on, coupled to the engine—usually by belts, and two hydraulic connections made to the booster. Overload protection is built in.

Series VT17 comprises identical pump and valve units without the reservoir and is designed for installations where a separate tank is preferred. *Vickers Inc., 1408 Oakman Boulevard, Detroit 32, Mich.*

Safety film . . .

. . . on the use of oxyacetylene cutting and welding equipment has recently been produced. Entitled "The Guy Behind Your Back," is specifically designed for companies to train their own employees.

The story is presented in an amusing way by the use of many cartoons and an easy-going narrative. It is a light, but not comic, approach planned to make the serious business of safety in welding easy to absorb. Free showing of this 20 minute film may be arranged for by getting in touch with the Air Reduction Company in your vicinity. Additional information may be obtained by writing *Air Reduction Sales Company, 60 East 42nd Street, New York 17, N. Y.*

New leak detector . . .

. . . is said to detect the most minute leaks where gas or air is used. It spreads over surfaces and creates a growing cluster of live bubbles wherever a leak occurs.

Leak-Tec is said to be non-flammable, non-explosive and non-injurious to the person using it. It can be used in testing for leaks on gas filled electric cables and transformers, refrigeration, air conditioning equipment and air line leakage. *American Gas & Chemicals, Inc., 45 Rockfeller Plaza, New York.*

Bearing and assembly . . .

. . . shown in illustration is one of the 87 new clutch release bearings and assemblies now being offered.

Lower COST— Longer LIFE!
MEYERCORD DECAL TRUCK SIGNS
"Ads on Wheels"
MEYERCORD TRUCK DECALS
First on the trucks . . . first for the truckers
Through rain, sleet, dust . . . year after year . . . MEYERCORD decal truck signs help boost your business and promote good will. MEYERCORD decal signs assure absolute uniformity . . . they batter down costs by eliminating costly sign painting lay-up time. Investigate the many money saving advantages offered the truck owner and operator by MEYERCORD decal truck signs.
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Chicago 44, Ill.

The manufacturer claims that misalignment can be avoided by use of these all-steel replacement clutch release bearings and assemblies, precision-made to close tolerances up to original equipment standards and chemically treated to resist rust. The line give complete coverage of buses, trucks, and cars. *Dorman Products, Inc., Cincinnati, Ohio.*

Skin cleanser . . .

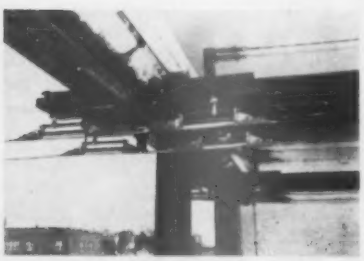
. . . for use in the automotive industry has recently been introduced. Labeled "PRO," the new cleanser is said to thoroughly cleanse skin of all grease, grime and dirt without the use of water.

According to the manufacturer, Pro contains lanolin and prevents soreness due to chapping. *Nox-Rust Chemical Corporation, Chicago, Ill.*

Open end-box wrench . . .

. . . featuring a new design has recently been placed on the market. A redistribution of weight is said to have created exceptional balance through slimmer heads . . . longer and narrower handles.

According to the maker, this line of wrenches is more comfortable to work with and permits nut rotation in more difficult and confined quarters. Both heads have same size openings in a range of sizes from ¼ to 1⅝ inches. *J. H. Williams & Co., 400 Vulcan Street, Buffalo 7, N. Y.*



Door trolley bridge . . .

. . . is designed for trolley coach and street car operators. According to the manufacturer, the bridge can be used on any overhead rolling door.

It has a movable steel runner which is hinged to a casting on one side of the door and is counterbalanced to automatically open and close with the movement of the door. *Ohio Brass Company, Mansfield, Ohio.*

New tune-up tester . . .

. . . designated as Sun Tune-Up Tester, Model TUT recently was announced. This new unit is said to speed up and improve engine tune-ups. To locate the most common causes of poor engine performance, the TUT is said to make these seven over-all tests:

- cranking voltage
- dwell tests
- ignition timing
- secondary efficiency
- ignition test
- engine vacuum
- operating voltage

For complete details about the new tester, including a demonstration in your own shop if you wish, write to *Sun Electric Corporation, Dept. 1541, Harlem and Avondale Avenues, Chicago 31, Ill.*

LP hand model blow torch

. . . with disposable fuel tank is now available. Complete with all-brass burner and fittings, it is designed for soldering, light brazing, and shop use where heavy duty equipment is not required.

No filling is necessary, because the entire fuel tank is replaced by a refill unit as needed. Special features include factory-set pressure relief valve, wide-range positive-control flame adjustment, I.C.C. approved heavy-gage large-diameter tank for greater stability and easier handling. *The Turner Brass Works, Sycamore, Ill.*

Continued on next page

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Use Moto-Gard to reduce Maintenance Costs and insure Longer Life for Your Motors. Moto-Gard will protect your Motor against Damage from an Oil Failure or Overheating. It automatically stops the Motor Ahead of Any Damage if the Oil Pressure runs too low or the Motor gets too hot. MOTO-GARD will make your equipment Safer and More Profitable.

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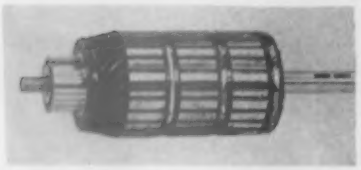
WHAT'S NEW

Continued from page 115



Generator bus armatures...

. . . with a claimed efficiency increase of 30 per cent are now being rewound to factory specifications with rectangular bar wire.

Silver soldered throughout, these armatures are said to enable starters and generators to turn over on a low battery and also reduce battery drain. Because of the specialized rewinding method each armature according to the maker, lasts as long as the commutator with proper installation and reasonable care. Cost of rewinding is less than that of a new armature. *North City Auto Generator Exchange, 808 Rising Sun Avenue, Philadelphia 40, Pa.*

Hydraulic hand Jacks . . .

. . . in capacities of 3 through 20-tons now are available. Called the G.V.M. series, these jacks are designed to handle the new lengths, axles heights and capacities of heavy vehicles.

New design features incorporated in the G.V.W. series include oversize malleable iron pump beams, malleable iron top caps, sharp tooth cross-milled serrated saddles and pumps that can be replaced in the field with an ordinary wrench, according to the manufacturer. *Blackhawk Manufacturing Company, Milwaukee 46, Wisc.*

New air sander . . .

. . . with a operating speed up to 6,000 cycles per minute is now on the market. The new orbital-type air sander is said to be ideal for rough sanding and preliminary operations by providing quick, economical make-ready for finer finishing where needed.

It has a built-in water attachment for wet sanding. New pad control eliminates side sway, making it possible for the sander to be used next to edges, moldings and in tight corners without damaging the work or without recourse to hand sanding. *Sundstrand Machine Tool Co., Pneumatic div., Rockford, Ill.*

Stop Sludge-Caused
Maintenance Costs in Your Fleet!

The basic cure for sludge formation in any engine is not detergency alone, but insurance that water vapor is continuously vented from the crankcase.

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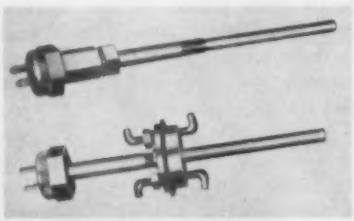

Engine preheaters . . .

. . . designed to eliminate cold weather starting problems have been introduced. Installation of the new freezeplug model has been simplified with a specially designed clamping bolt freezeplug adapter. This improvement, the manufacturer points out, eliminates the disadvantages of the drive-in force fit freezeplug adapter which leaks when the motor block expands under normal operating conditions.

Expansion unit assembly on the head-bolt unit reduces torque strain on block threads and allows for easier installation. Immediate heat is made possible by use of high wattage (650) and better insulation. Formerly asbestos was used for lead wire insulation, but because of its characteristic moisture absorption, it has been replaced with a silican resin, impregnated fiber glass sleeving, the manufacturer states. *Phillips Mfg. Co., Dept. KP-7, 2816 Aldrich Avenue, Minneapolis, Minn.*

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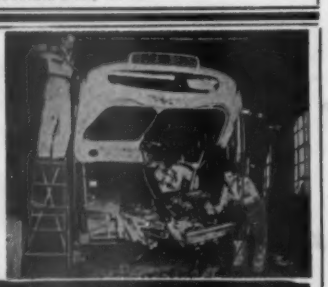

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27	1950	Flxible	29	38	1951	Flxible	37
28	1946	Flxible	29	39	1947	Flxible	29
31	1945	Aerocoach	37	53	1945	Aerocoach	37
32	1945	Aerocoach	37	66	1950-51	Aerocoach	37
33	1950	Flxible	29	67	1950-51	Aerocoach	37
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Part of the 147-bus fleet of Trenton Transit, Trenton, New Jersey. This fleet has used Willard Batteries for 23 years.

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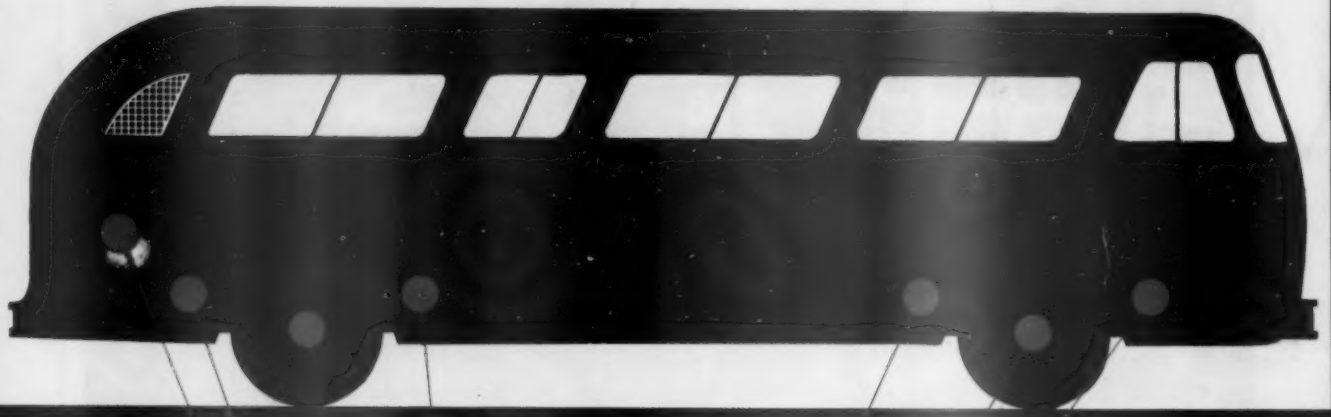

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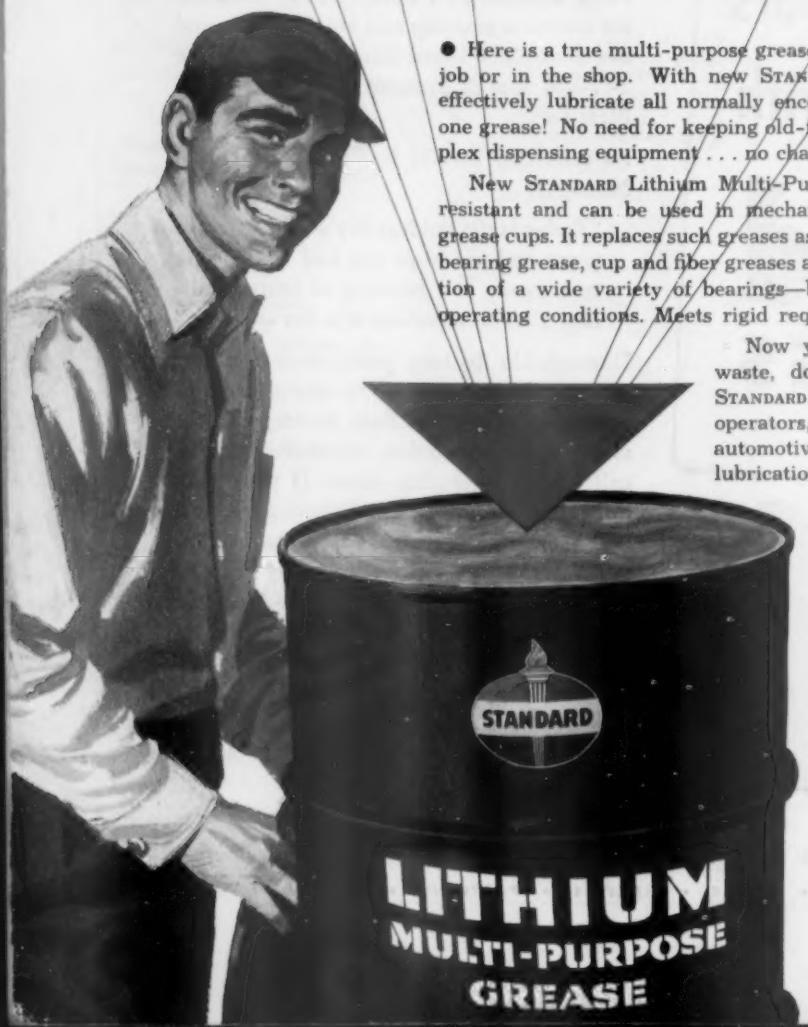

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